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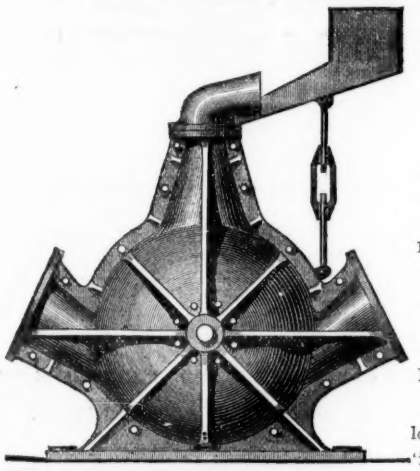

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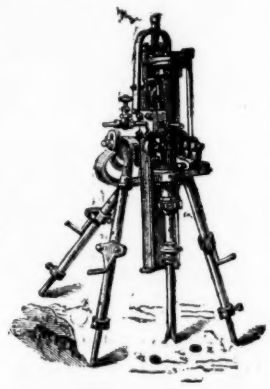

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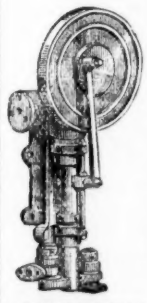

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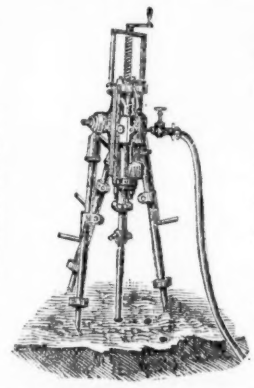

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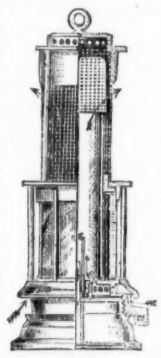

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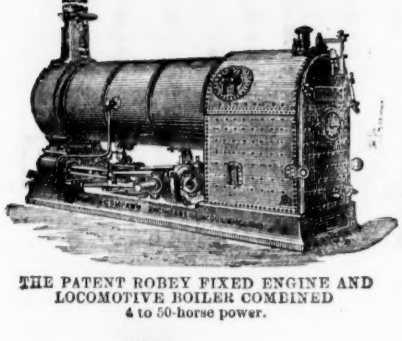

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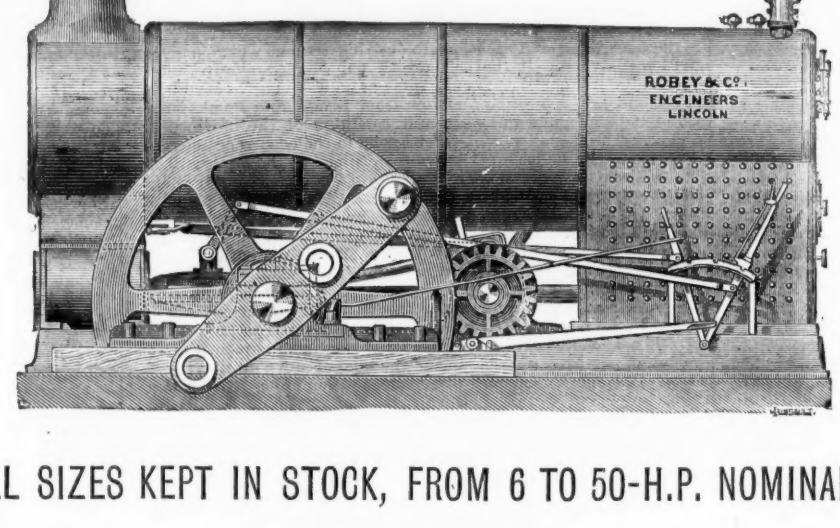

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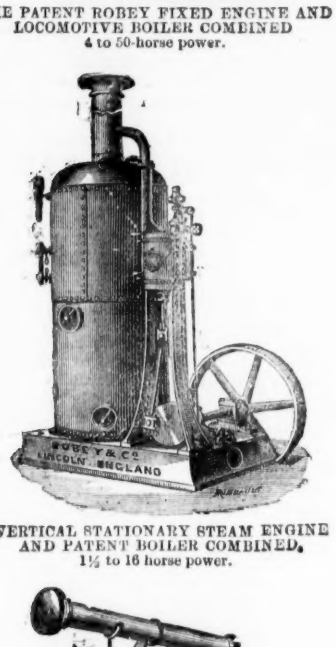

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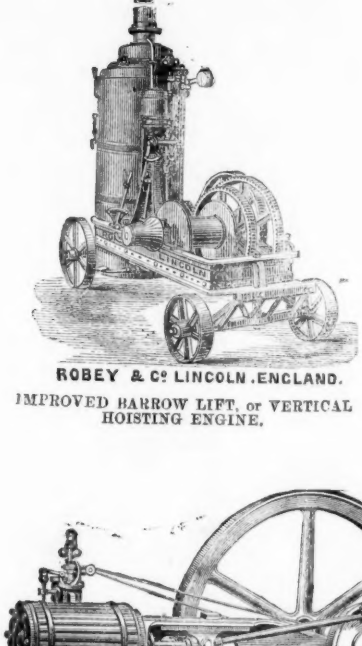

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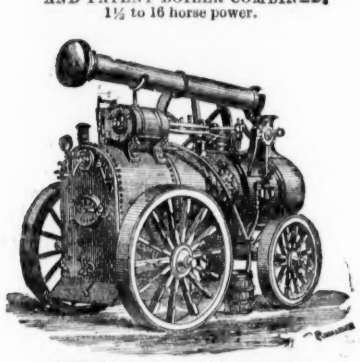

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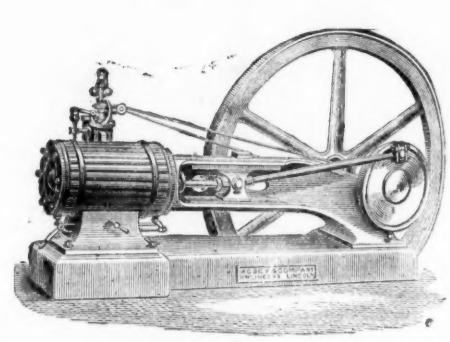

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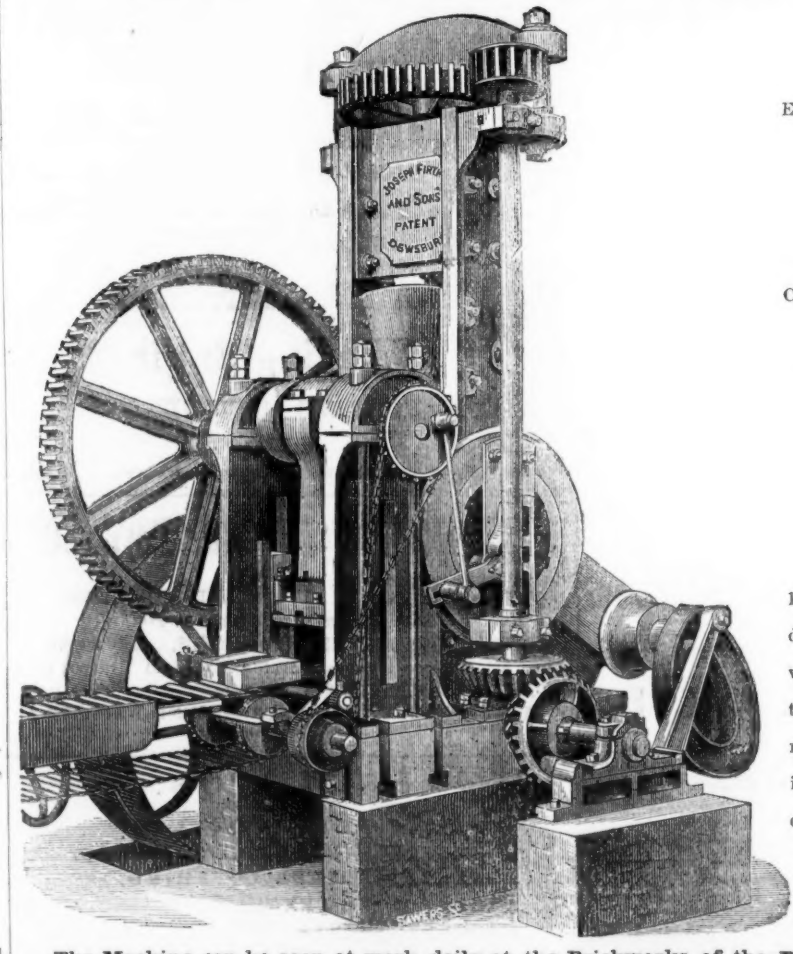

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Original Correspondence.

GOLD IN INDIA.

From the widely extended interest at present felt in everything connected with the question of Gold in India, the paper read before the Society of Arts by Mr. HYDE CLARKE, D.C.L., yesterday evening has been anxiously looked forward to, the reputation and accuracy of the author—to whose courtesy we are indebted for a revised advance proof, which enables us to publish the abstract in to-day's *Mining Journal*—being a guarantee for its reliability. Dr. Hyde Clarke remarks that it is of much moment to all interested in India to determine what is the character of the gold formations, and what effect they are likely to have on the country. In so dealing with the matter in its general relations there will be this advantage—that the possibility of promoting any individual speculation will be eliminated. That there will be speculation, and wild speculation, in the new undertakings there is not room for any doubt, but that is not to be taken into account in the serious considerations. It is not the casualties, not the extraneous circumstances, which are to be mainly regarded, but the really essential conditions. There is a prevalent sentiment in Indian circles that it is necessary to be cautious in dealing with the gold question. It is necessary to be cautious and to be prudent, but then the application of the principle has to be guarded. If it be considered desirable to avoid fallacious hopes, and to discourage undue excitement and gambling, it is none the less desirable on the other side to be cautious and to be prudent, so as not to impede or discourage the legitimate development of any resource of our Indian empire. This is a right side of prudence, for if we take a false step then in this case, as in so many others, we shall throw back for years the advancement of the population. To such hesitation Dr. Hyde Clarke very justly attributes the delay in commencement of the railway system in India, and which has deprived the country even to this day of its full benefits, and such examples can be multiplied. The discovery of gold in India is indeed one of the most remarkable events in this age, which has seen so many events materially affecting the destinies of the human race. The rediscovery of gold in California and its discovery in Australia, greatly as they acted on the enterprise of the world, yet as the operations in connection with them took place in countries thinly peopled, they did not have the direct influence which must result from the development of gold mining amidst populations numbered by hundreds of millions. It is, as he says, beyond the power of any one to determine the profitableness of the new workings, or the precise manner in which the conditions of India will be modified, but the careful observer cannot fail to ascertain from history that the antecedent circumstances are such to give importance to the character of the present development. This is what we have now to take into account, not actual results, not possible loss, but the real gravity of the explorations, so that we may neither exaggerate our expectations nor neglect by carelessness what may be fairly esteemed to be of possible value to the empire. While the numerous ancient workings are admitted as acknowledged evidence of former yield, yet they constitute with many a chief element of doubt, because it is considered the cessation of working is an indication of present worthlessness; but as he points out, there are recurrent epochs in which every shaft is fruitless, and the condition of the Indian gold mines is not exceptional. Their abandonment in no degree shows they cannot pay; it is no argument against their resumption, and none in favour. The value of the Indian mines must be determined by conditions altogether apart from such facts. The facts are in favour of the general existence of gold formations, and, considered in this light, they are of great importance, for they bear testimony to an extent of formations illustrative of former enterprise, and inviting present consideration.

Referring to the primitive method of working observed by recent inspectors who have visited Southern India, Dr. Hyde Clarke says that in his opinion there must have been more able mining by the older races. An adit, 126 ft. in length, on the Kentail estate, seen by Mr. Brough Smyth, is a type of this class. There must have been in ancient India the identical workings of the old miners, of which we have such fine specimens of Roman and earlier times in Spain and Britain. Although gold production, under an energetic despot, may have been carried on with good results, a small despot or chief would not be equally successful in the attempt; on the contrary, he would find every obstacle. Nothing can be a better testimony of the neglect of a gold district than its falling into the hands of the native washers, who have nothing but the simplest apparatus. The most inconsiderable application of better expedients, as of a cradle, alters the whole arrangements, and is attended with commercial results. The native gold washer can get through but little material, and, even when most expert, in some districts, sends into the current much of the gold. In the early stages of discovery it is very difficult to arrive even at an approximation to the yield. The assays can only be those of casual specimens, giving no real estimate of the result. An assay must depend on the sampling, and though this can be effected with a poorer ore like copper and lead, it is difficult with gold, where a very rich metal is widely diseminated. Even where assays are applied in a practicable way in gold mines there is always a large difference between the assay and the practicable yield. Gold, from its nature, can be distributed in such minute fragments that it is not mechanically secured, but remains in the stuff, or is floated away. In a mine so productive as that of the St. John del Rey Company, in the Brazils, which has given dividends for above half a century, the best estimate is that the discovery of gold has only been from 70 to 73 per cent., leaving from 27 to 30 per cent. for possible loss, as the processes applied to the remaining material are successful only to a small extent.

So far as Indian gold is concerned the districts now under consideration are in a hill region, subject to a very heavy rainfall, which has been stated at 300 in. in time past. This is carried off by streams, and in some parts will not be available, and cannot be pounded or secured by bonds. There are, however, estates where streams, and in other districts storage, can be supplied for water. In fact, India in these respects has advantages equal to most portions of the Californian regions, and beyond Australia. There are few parts of New Zealand better provided, nor are there in Brazil. Thus, where an estate has a good reef on it, and the water well laid on, the prospects may be looked upon as hopeful. Still, there will be vicissitudes, a season of that rainfall, the bursting of dams, and various incidents, which may interrupt steady working. Calculations are put forward that a large and inordinate amount of capital is already invested in Indian mines, but it is quite idle to give such figures. The greater part of the amount subscribed being for the purchase of estates having gold formations, constitutes a mere transfer, and the country is neither richer nor poorer, however individual wealth may be affected, and the condition of one person or another. The true apportionment of capital is for the export of machinery, and for the remtttance of wages for workmen. The fact is, so far from a large amount of capital being provided it will be found in more than one case that the capital is insufficient. Whenever too large a proportion has been applied for purchase money the working will be starved, and even a good mine may prove unremunerative. The principal real loss of capital will be incurred by injudicious provision of machinery. Whenever too large a quantity of machinery has been sent out, not for mining requirements, but to produce an effect on the Stock Exchange, and to run up the shares, a heavy loss may be looked for. Wherever a mine goes out of working, although the machinery may be good and in fair order, it seldom fetches its price, as the removal of machinery is very difficult. Then when machinery is kept too long, during a depression, it likewise deteriorates, and may be reduced to old iron.

From the real investment, continues the author, of capital in India, notwithstanding much loss, a fair return to this country may be expected. Machinery makes a market for other machinery, and so does the supply of engineering workmen to a country. With a large number of such men attached to the mines, it may become possible to introduce and use other machinery not otherwise available. The expenditure for wages is not likely to be excessive; it will check itself, as when found unremunerative it will be stopped. Even the large salaries of superintendents and skilled officers cannot be a total loss to us, as many of these men will remain, and open up other enterprises. It is likewise necessary to have English or other foreign miners who understand the business, and are willing to go abroad, and encounter, with or without their families, the vicissitudes of distant travel. So far as this population is concerned, we have it at home in Cornwall and Wales, whence many proceed, not only to English countries in Australia, South Africa, Canada, and the United States, but to foreign lands. Our own people are well acquainted with gold mining in Australia, New Zealand, California, Brazil, and Colombia, and it is not a business that they have to learn, but one in which they have been largely engaged. Much, too, depends on the enterprise of such men, for many classes of working can only be carried on by the participation of such men as sharers or tributers, one of the forms of mining enterprise which distinguishes it from most branches of industry. The development of gold working means the development of English knowledge and enterprise, and the consequent progress of India. Then the railway system will no longer be stinted, and the correspondent benefits will be obtained. Many a commodity will rate locally at a higher price in consequence of higher wages, but the efficiency of railway transport, as compared with the bullock wagon, will place the commodity at the port under commercial conditions. Many commodities which now cannot be moved, and are excluded from trade, will under quick transport become exchangeable articles of commerce. If these results were only to be regarded as possible or probable, the whole subject of gold fields would be worthy of the gravest consideration, and as one not to be dismissed on doubts, or on the absence as yet of ascertained realisation.

The time must come, says Dr. Hyde Clarke, with the working of the gold regions of India, that the wages will be practically the same in Wynaad as in Victoria, and this will not impede the gold workings, because in Victoria the poorest stuff is raised to a profit with high wages and high-priced food. It is difficult in any reasonable compass te give a fair idea of the extent of the gold regions of India, or to effect this by either historical or topographical treatment. If at the present moment the Wynaad regions concentrate attention on them they cannot be regarded in any general consideration to be entitled to sole notice. Other districts in ancient times were better known, and there are mineral formations in outlying regions which, on examination, may prove to be productive, and which may give unexpected value to countries now regarded as undeserving of attention. In 1792 and 1793 a joint Commission from Bengal and Bombay was appointed to examine the state and condition of the province of Malabar. The Commissioners refer briefly to the occurrence of gold in treating of the subject of the royalties claimed by the rajahs, which is stated to be an "all gold one," and also of "compositions of gold," which were found in the Nilambur district. In 1793 Mr. Duncan, Governor of Bombay, formed a strong opinion of the value of the mines, and took some steps to ascertain the extent of them. In 1802-3 the auriferous rocks of the Nilambur valley are again mentioned, and in 1813 a work was published by Dr. Whitelaw Ainslie, in which an account was given of the localities where gold is found in India. He says—Gold dust has been found in the bed of the Godàveri, and in Malabar in the bed of the river which passes Nilambur in Irwadi district. It has, moreover, been procured in very small quantities in Wynaad, in the Arcot district, and in the sand of Beypore river, near Calicut. Though the sources are evidently numerous from which this valuable metal can be obtained in the Indian peninsula, it would seem from the little interest they have hitherto excited that none of them promised to be very productive.

It must not, continues the author, be argued that the Indian authorities were so very remiss, as apart from political disturbances, which attracted the attention of the authorities, there was no school of gold mining in England. Such existed in Germany alone, and the subject could in England be studied from books only in a most imperfect manner. It was only at a later time that Englishmen were employed in gold mining and reduction in America and became conversant with it. It was not, however, until the Australian discoveries that we obtained a large and organised school within our own empire, which now justly holds a high rank. Indeed, the Spanish, German, and Russian schools are now connected with smaller operations, while the English and American schools are supported by practical works on a much larger scale. It is also by these schools that the application of machinery has been carried out, beyond the examples of the other and older branches of professional mining. While this state of affairs accounts to a great degree for the assumed neglect of the Indian formations, it also accounts for the failures in the next epoch, when the Indian authorities more seriously and more earnestly turned their attention to their gold resources. The arrangements with Mr. Huguenin were most absurd, and it will serve to show what erroneous and exaggerated ideas prevailed, that Mr. Huguenin stipulated with the Government that he was to have one-half of the gold he might assist in finding and reducing during a period of 12 months, and the same proportion of all gold he might collect from the mountain streams, &c., by washing; the Government having the right to take such share of the produce at the market price of gold. Had the Government, or its conductor had the advantage of experience elsewhere, they would have known such conditions were impracticable.

The exertions of Lieut. Nicholson are prominently referred to, and it is observed that, in truth, the labour of Mr. Sheffield and Lieut. Nicholson were worthy of a better fate. The attention of Mr. Sheffield was naturally chiefly directed to the river washings, of which he knew many many sites. He also referred to Wynaad. He, however, repeated that "There appeared no reason to doubt that golden ore is homeogenous to the soil in the mountains and hills of Malabar." He proceeds to name Devala. Lieut. Nicholson came across many curious facts. In one place he found no less than 27 old shafts. In another he came across 500 or 600 Moplahs working regularly, and paying royalties to the local zemindar or rajah to the extent of 700*l.* a year. He sent up some stuff from the Devala Mines which assayed about 90 per cent. of gold and 8 per cent. of silver, and a portion of copper. Silver, so often associated with gold ores, appeared to be a large constituent of those ores, and they will give occasion for the operations of parting, which can be affected in the presidental mints. In the case of the gold regions, as in other cases in India, it will be found that English intelligence and enterprise are the real and efficient engines, for the improvement of our empire, and must be applied in a fuller measure than the staff of the Government can supply. It will be observed that the fever incident to the district was regarded half a century ago, as it is now, as a serious impediment, and this was a discouragement for gold working. It so happened that the availability of the district for coffee-planting engaged attention, and when once this was seriously undertaken Wynaad and the neighbouring countries were occupied and turned to account. The planters gradually became aware of the gold finding, and turned their attention to it.

The chief of the orignal Wynaad companies were, after the Prospecting Company, the Alpha Mining Company and its dependency the Prince of Wales Quartz Reef Gold Prospecting Company. These companies were chiefly under local auspices. The operations were, however, on a very small scale, and afford very small materials for arriving at a judgment. On June 1, 1877, the Prince of Wales's Company took possession of the Alpha Works under agreement, but did not begin work until Aug. 17, 1877, continuing to mine until Feb. 7, 1878. The value of the gold got was rather more than 8000 rupees from about 320 tons, and even that is not a mercantile result. The average yield was nearly 10 dwts. 12 grs. It appears the machinery was inadequate, but a main cause of failure was the roasting of the quartz in kilns, before sending it to the mill. The result reported was that the fusible lower sulphides coated the gold, and prevented its amalgamation. On comparing the average yields with those furnished with Victorian statistics, Mr. Smyth found such yields in Victoria favoured large results and large dividends. At the same time the sagacity of the leading director in the Moyar Coffee Company, Mr. W. J. Rhodes, gave further strength to the new movement. Mr. Rhodes, with his colleagues, acquired the mining rights for the Coffee Company, and thereby obtained for it advantages of an exceptional character, though these services have not yet been adequately compensated. The conviction impressed on a number of able men of the real character of the district resulted, naturally, in the determinatio[n] to prove its resources.

In the last year, 1880, and in this, numerous companies have been formed on a large scale, and great speculations in the shares has taken place on the Stock Exchange. While we may look for fair results from fair mining, and it is to be hoped for large dividends, we must also look out for a large amount of individual loss, to be measured only by the greediness of the speculating persons. Some of these losses will be most severe, as step by step the gamblers are drawn in, stimulated by the real or supposed gains of others. Those buying at the top of an exaggerated premium will sustain all the distances of fall from that to the lowest collapse, when the concern is sold off as worthless. Some very good descriptions of the Wynaad and the Mysore districts have been published in the memoirs accompanying the political survey of India, particularly the report and map of Mr. King, in May, 1875. Mr. Brough Smyth, in his reports, has entered into valuable local details. Mr. Oliver Pegler has given a general mineralogical sketch of much interest. Mr. Oliver Pegler says (Dr. Hyde Clarke quotes from the Journal of Jan. 17, 1880, and adds: "In the *Mining Journal* will be found preserved, as customary, the current information on the subject) that the range of mountains of the Wynaad is of ancient formation, belonging to the Paleozoic period, more especially to that of the Silurian formation, a matter of much interest. The highest peaks, as in the neighbourhood of Ootacamund, are formed of hard, dense, and crystalline rocks of the metamorphic series of the granites, syenites, &c. The more fissile varietes are also here present, and being softer have yielded to the disintegration and denudations of time, and have formed the valleys and dells adjacent to the peaks. These softer rocks are of a much higher colour than the harder granite and crystalline formations, and give a red and brown appearance to many portions of the surface of the country. The average height ranges from 7400 to 8400 ft., and the whole of the formations are impregnated with black magnetic oxide of Iron, which after a shower of rain appears as black sand on surfaces where the water has run over in streams. This is particularly noticeable along the road sides. The crystalline rocks continue for a considerable distance down the slopes towards the Wynaad country, becoming lighter in colour, coarser in texture, but more laminated and fossil in structure, changing into the gneissic and more laminated varieties of metamorphic rocks.

Labour apart from technical labour of imported miners is available, but there are seasons and places to which Englishmen should not be exposed. There are, however, places where the coffee planters are able to reside on their estates with their families during the whole year. Then there is the station at Ootacamund, a retreat for health and pleasure within the neighbourhood, which will afford a great revenue. A mining district, with a floating population, is not regarded as a colony like New Zealand, in which men are to spend their lifetimes till old age. Accessibility may be regarded in connection with the other conditions. Within four miles of some of the Mysore mines is a railway station in union with the main Indian system. Although the Alpine railway to Ootacamund has not yet been constructed, the plan is delayed for want of support, and gold operations will stimulate this, as also the projected extension to the Wynaad district. So far as Wynaad is concerned this is most material, for although there is the great advantage of access to Calicut and other ports on the western coast, within 30 or 40 miles of some of the gold-bearing formations, the elevation to be reached is already described as great, and to be ascended over a country much cut up. Thus, with a seaboard nearer than in New South Wales, Victoria, Queensland, or California, and more accessible than San Francisco, nothing heavier than a few hundredweights can now be got up to a mine without difficulty and uncertainty. All the weight has to go up, supplies for men and mines—except such food as can be locally got—but the weight to go down is in pounds of gold easily to be carried—a return freight quite out of proportion.

While Australia can make its payments with wool, and Peru with guano, India has to provide in many parts for a most dense population from the produce of the soil. Commodities for exchange and export are only to be obtained by displacing articles of food. Undoubtedly some of the local circumstances of India are peculiar, and create difficulties in the way of adjustment, but these can be met by due provisions. It is the fact that, historically, India had a gold coinage, and there can be no local objections to its having a gold coinage now, as well as a silver coinage, and any objections to this must come from the outside. In the world we find a gold coinage predominant, and those who object to a gold coinage for India are those who object to bi-metallism as a system, and maintain a gold currency here, and are to some degree inconsistent. India, like the whole earth, is under the dominion of change. That great engine of society, the railway, which affects the trans t of men and the transport of commodities, has done and is doing its work of change in India and elsewhere, and the people accommodate themselves to it, and will never abandon it but for some other improvement. Most of the alleged grievances have no real connection with the necessity of English rule in India. This relation will have no more real effect when the condition of India is altered by the gold supplies. The gold supplies will be coined, and much of this coinage be exported, as is that of Australia. There is no reason, too, why this coinage should not be like that of Australia, in sovereigns, although smaller coins may be struck for local use.

The balance of facts is in favour of a sovereign coinage for India, and then the silver coinage would become token money. If India exports gold sovereigns the exchanges will be under different conditions, both as regards the Imperial operations and those with abroad.

MODERN GOLD MINING—ITS SUCCESS AND FAILURE.

SIR,—Referring to the paper by Mr. Lock on the above subject, and the discussion following it, as reported in the *Mining Journal* of Jan. 22 and Feb. 5, which I have read with considerable interest, it seems to be inferred that the success of gold mines of a low produce, and yet paying dividends, was entirely due to present local management. It is, however, a fact which cannot be disputed, that without good local management these results could not be obtained, but it also shows that good management has been displayed in the past, not only locally, but by those at the head of affairs in having the mines properly opened up for economical working, and procuring the machinery best suited to the extraction of the gold from the quartz obtained from their mine. It does not hold good that the same machinery and mode of working copied into another mine will prove the best there; on the contrary, it might prove a dead loss.

Mr. Smedley's remarks, that "the failure of foreign gold mines in nearly all cases was due to local mismanagement," bear a great deal of truth; but there are also other causes which have as much to do with their failure as this has. "An experienced Gold Mining Engineer," in the Journal of Sept. 11, 1880, pointed out the principal causes of such failures, and I quite agree with him, although I believe that local mismanagement in some form or other may be held responsible for the greatest percentage of failures in foreign mining. The term "local mismanagement" seems to infer only to the inability or inexperience of the manager sent out. It has, however, a much broader signification than that. Local mismanagement is very often the result of mismanagement at home; and among other causes of local mismanagement may be recorded, sending out machinery, materials, and even men, altogether unsuited to the locality; sending out orders for this and that to be done totally unsuited to the locality or circumstances, which the manager takes as implicit law, and has not the courage to remonstrate with or tender advice to the direction at home, though he knows that by carrying out these orders he is running to decided ruin; and very often the local manager is placed in such a predicament by his employers at home, that he has no remedy but acquiesce in the mismanagement of affairs, or return home at his own expense, which he is not always in a position to do, and after he has assisted in such mismanagement quite against his will, all the cause of failure is attributed to him. All such cases of mismanagement do not come to light.

I quite agree with Mr. Smedley, that the tribute system might be advantageously introduced into many mines, but where, when, and how should be left entirely with the local manager. It requires a

great deal of tact and judgement to successfully introduce anything like contract work amongst the natives in foreign countries, where they have never been used to anything of the kind, and it would require a great deal more to introduce a system of tribute where they would be paid wholly by the produce. I fear, that where skilled labour has to be imported the tribute system, pure and simple, will be very slowly introduced. I would, however, beg to suggest to Mr. Smedley's consideration the system which was in use at the Cobre Mines in Cuba, when those mines were at work, where every man, besides being paid fair wages, had an interest in the dividends the same as an ordinary shareholder, according to the number of so called shares assigned to him in his position in the mines, thereby giving every employee a direct interest in the prosperity of the mine without the inducement to work it unfairly.

Although Mr. Lock may not profess to be a practical man, he is very evidently gifted with a practical mind. His reasonings on the stamping of gold quatz are quite consistent with practice. To crush gold quartz as fine as flour is a very great mistake; when a grain of gold is struck it flattens, at the same time it cracks or becomes serrated at the outer edge, and as the blows are repeated pieces are detached, which in their turn undergo the same process, until they float out from under the stamper, and many of these atoms are so thin that they float off, and no system of amalgamation or blankets at present in use will catch them, and the finer the quartz is crushed the more liability is there to this loss; this will in many cases account for a great deal of the difference between assay value and actual products. The reason why the arrastre gives such good results in savage hands, as compared with modern appliances, is that in the stamps the grains of gold are flattened until many of them float away and cannot be caught, while in the arrastre the grains of gold are rather rounded, and from the high specific gravity of gold these rounded grains readily sink to the bottom of the separator, whilst many of the flattened grains float away. Another great mistake very often made in quartz crushing is in having too much water passing through the battery. When the material is in a more pulpy state, the agitation allows of much larger grains to rise from under the stamper than a less dense mass would do. In quartz containing only free gold, without pyrites or other metallic substances, with rough stamping, careful concentration and classification, with pan grinding, and careful manipulation and attention to little items, 90 per cent. or over of the assay value may be got out. In quartz containing pyrites and other impurities when amalgamation cannot be worked satisfactorily, then the concentration of these impurities should command the first consideration, and a process adopted to separate the gold from the impurities, and no attempt should be made to extract the gold without taking these impurities into account, or a serious loss is sure to be the result. Many people have an idea that the capacity of a stamps depends on the weight of the stamper; this is entirely a mistaken notion, as may be found in comparing the weight of the common stampers in use with that of "Scholl" or any other pneumatic stamper. The first item in considering the output capacity of a stamps is the material to be operated on. I have with the same stamps on one class of material from a mine got through a maximum of over 10 tons per stamphead per diem, while another material to be operated on, one ton was the maximum to be obtained at the same speed of working. The second consideration towards output capacity is the speed or number of blows per minute, combined with discharge grate area. The third consideration is the size at which the material is introduced into the battery; weight of stamper does not make an item in the matter, as it is only a mechanical question of so many pounds lifted so many feet per minute, and a stamper of 400 lbs. may be made to do the same duty as another of 800 lbs. up to a certain limit, and on some stone would do a much greater duty with the same expenditure of power by simply driving at greater speed. As a rule, the weight of stampers are regulated either by the maker, engineer, or the parties ordering the machine without any consideration whatever of the material it is to operate on.—*Birmingham, Feb.* 8. C. F. BRAY.

THE MINERAL RESOURCES OF CHILI.

SIR,—So many English capitalists are now interested in Chilian mining enterprise, especially in the province of Atacama, of which province Copiapo is the capital, that an abstract of the latest official report with respect to it will probably be acceptable. Caldera, the principal port of the province, has a population of about 2500 inhabitants, who are mostly engaged in dispatching and receiving goods from the interior, in working mines, and trading with the neighbouring ports. The Copiapo Railway Company has a large workshop here, which employs about 180 hands, and which, besides keeping the rolling stock of the line in good order, executes important orders for machinery and repairs for the mines of this province and for other ports on the coast. With the exception of fresh fruit and vegetables, brought down by rail from Copiapo, and a few oxen driven down from that town, Caldera, in common with all the ports of the desert of Atacama, is entirely dependent upon the coasting steamers for provisions. There is a town 58 miles up the Copiapo valley of the same name, of about 10,000 inhabitants, all more or less devoted to the silver and copper mining industry, which has been on the decline for many years past owing to the fall in the price of copper, and the difficulty of working, many of the mines now becoming too deep and too poor to give good incomes. The recent emigration to the nitrate fields in the North, and the war, which has taken away 1400 miners as soldiers from this province, are also two causes of depopulation seriously affecting the mines by rendering labour scarce and expensive. The valley of Copiapo is long and narrow, and winds between two high barriers of naked hills or ramifications of the Cordilleras, and which are studded with mines either worked or abandoned. It is watered by a rivulet that a man can jump across, and has plenty of arable land, but the great scarcity of water only enables a small portion to be cultivated.

The silver mines of the province of Atacama produced less during 1879—no later returns are available—than for many years past, owing to the poor percentage of the ores found, and the lack of new rich discoveries. In the district of Chanarcillo, which has given since its discovery in 1832 from $200,000,000 to $300,000,000 worth of pure silver, the mines are getting so deep that only the richest ore will repay the expenses of extraction. Five of them are over 550 metres in depth, and the deepest is 680 metres. There the ores found near the surface are termed "metales calidos"—that is, "warm ores," so called from the facility with which they can be amalgamated with mercury, and they consist of chlorides, bromides, and iodides of silver. These are nearly exhausted now, but in the depths of the mines from 200 metres below the surface to the bottom are found the "metales frios," or "cold ores," so called from the difficulty with which they are amalgamated. These last consist of several combinations of silver, with sulphur, arsenic, and antimony, and often show veins of native silver. In the Lomos Bayas district the chlorides prevail, and are giving good results. In the Tres Puntas region, which has all kinds of ore, the mines are not very promising just now.

The owners of the Constancia Mine, in Chanarcillo, have sent to England for some of the most modern machinery, and are now awaiting its arrival, together with that of a competent engineer, who, if he is successful in placing that mine on a new footing, will give the silver mines around another start. Hitherto the want of confidence in the introduction of new machinery, and the non-employment of first class foreign mining engineers, together with the want of capital, have combined to keep the mines of this province far behind hand. The ore in the Chanarcillo Mountain has been calculated to last for several years yet, but the expense of working in the old fashioned ways is very great, as, for instance, where the cost of boring at the bottom of some of them is $300 per yard, and only the richest ore will refund this. In many of the mines, especially in Chanarcillo, necessity has made it more profitable to overhaul again the "desmontes," or heaps of refuse stones thrown up out of the mines, and cart them down to the amalgamation establishments, than to go on extracting poor ores. This can be done now, owing to late improvements in the chemical processes used to separate the silver from the ore. The lowest percentage accepted at the establishments round Copiapo is 0·007, and many of the "desmontes" contain a "ley" or percentage of from 0·010 to 0·016, which will easily pay the freight down from the mine and the costs of amalgamation, and still leave a profit to the miner.

After mining, the principal industry of the province of Atacama is the amalgamation of silver, which is carried on in large establishments called "Maquinas." Five of them are now working in the town and vicinity of Copiapo. They either purchase the ore from the miner, and extract the metal for their own account, or they extract the silver for its owners for a certain sum, determined after the ores have been assayed. The ores generally arrive at the works from the mine in sacks or leather bags, and already broken up into small fragments. They are first crushed up by "trapiches," or heavy rollers, working in water into a fine powder, which flows out as mud, and is first allowed to drain, and then is exposed to the sun for a week or two until quite dry. It is then put into large barrels 6 feet in diameter, with quicksilver, sulphate of copper, salt, zinc, lead, hot water, and other ingredients in a proportion which varies according to the class of ore, and which is kept secret. The barrels revolve with the mixture for from six to eight hours, until the silver is well absorbed by the quicksilver, when they are emptied out, the amalgam is separated from the mud and chemicals, and as much quicksilver is squeezed out of it as possible before it is put into inverted retorts, where the remainder of the quicksilver is distilled off by heat. The pure silver which remains after this last operation is simply cast into bars, and after being carefully weighed and assayed is ready for exportation. The average percentage of silver ore now worked is 0·030, but this, of course, jumps up considerably when a rich batch comes in. The wages of a peon in these establishments is at the rate of a dollar a day, and is the same as that of the ordinary miner.

The year 1879 was exceptionally bad for the copper mines of this province, on account of the low price of that metal in England, but everything is now improving, many small mines have been started afresh, and the older ones are flourishing, so that their owners are continually lamenting the want of men and the prolongation of the war, which, by causing so many of the best miners to volunteer away as soldiers, leaves only the inferior workmen behind. The attention of capitalists has been directed lately towards the introduction of the reduction of copper by the wet process which is carried on in Spain, and hopes are entertained that many poor mines will benefit by it, but as yet no trial has been made here with any success. Want of water is another permanent drawback for the mines in the interior, many of which have none even to wash up their ores to a higher percentage. The exportation of copper ores has almost entirely ceased, with the exception of a small shipload or two yearly to the smelting works of Lota. Although freights to England are low, *via* sailing ships (having varied from 30*s.* to 45*s.* during 1879), still coal is brought here cheaply enough to make it pay to smelt all the ores produced, and the bar copper is shipped to England in the Straits steamers, paying a freight which in 1879 varied from 3*l.* to 3*l.* 10*s.* per ton. Copper regulus when containing either gold or silver is still sent to Swansea, as it does not pay to extract the precious metals from it on this coast.

For a long time it was thought that the province of Tarapacá was the only portiou of the desert of Atacama which produced nitrate of soda in sufficient quantities for exportation, but as the price of this article rose, and with it the export duties of the Peruvian authorities, many explorers examined the southern portion of the desert in Bolivia and the north of Chile. The first deposits found were those in the interior, near Antofogasta, which are now being worked on a great scale at that port, and may be said to be the cause of the present war. The new port of Taltal now counts 8000 inhabitants, and the monthly shipments of nitrate now exceed 45,000 Spanish quintals, and this quantity will soon be doubled when the numerous boiling establishments which are now being put up will be in working order. The nitrate found in the interior in beds which extend in a line about 70 miles from the coast, and parallel to it from Taltal to Antofagasta, is of pure a quality as that of Tarapaca, and only wants means of communication to enable it to be as extensively worked. The cost of a railway has been calculated at $1,000,000 for 80 kiloms, by a Government engineer sent to survey the valley. A contract has been obtained for its construction, and it is said that the works will be begun ere long. The railway will of course give still more life to that region, and cause the more remote nitrate fields to be eagerly sought after and worked, and the copper and silver mines in the vicinity, hitherto neglected, to be more actively pushed and their ores to be exported, the copper to the smelting works of Lota, and the silver to the amalgamation works at Copiapo. Taltal can also boast of a very good and safe harbour, one of the best on the coast, being easy of entrance and exit for sailing vessels, and now a port of call for almost all the coasting steamers. A project is also on foot for building a mole there.

Writing from Coquimbo, Mr. Grierson, who is British Consul there, remarks that copper mining and smelting being the principal occupations in this province, it was feared these industries would suffer very much on account of the scarcity of labour occasioned by the war, as well as the low price of copper during the first six months of the year. On the contrary, however, these branches of industry have latterly improved materially. He feels certain that if manufacturers at home were speculative, and forwarded their goods to respectable merchants to be sold on commission, they would be more successful in making sales, and then trade would thereby be extended. Thrashing and reaping machinery and other articles for agricultural and diary use, and also machinery for mines, are those principally required. All this would require a practical person to visit the country and study the local requirements, as the fact of all farming being conducted through irrigation alter the class and style of articles required, and those in demand in some places are often almost unsaleable elsewhere. A large quantity of the copper smelted in Guayacan is cast in ingots weighing about 14 lbs. each, and is refined to 99 per cent., the bar copper being considered as refined from 96 to 98 per cent. The mines of Tamaya and Panulcillo do not seem to improve with regard to the ley of the mineral raised, but continue to give large quantities of poor ores. Brillador and Higuera mines are giving good results, and with more machinery, &c., the latter district would produce increased quantities of good ores, the copper produced from all these mines being of a superior quality. Andacollo, 35 miles from Coquimbo by road and rail, has long been famed for the quantity of gold said to exist over the district, and if worked by machinery would give good results, the scarcity of water being the only difficulty.—*Feb.* 7. TOTORALILLO.

MINING IN UTAH—BIG BONANZA AT THE SILVER BELL.

SIR,—Fully recognising the advantage of introducing British capital into Utah mines, and knowing full well that the best way to do this is to endeavour to convince them that they will obtain a good return for their investment, I should like you to publish in the Journal some particulars about a property I have recently visited—the Silver Bell Mine—which is situated in American Fork district, which has been a producing mine for about two years past, and from the time the ore vein was first struck, about 40 ft. beneath the surface in the incline, it has given promise of becoming one of the most productive and valuable mines in the Territory. The ore is high grade, much of it carrying 300 to 500 oz. to the ton.

The width of the vein is over 20 ft., the pay streak of ore is 7 ft., widening at some places, but never getting less than 7 ft. It is a quartzite guangue, except near to the surface, where chambers and courses of galena and soft chlorides have been exposed. The hanging wall, so far as explored, is pitching down at an angle of about 30°, without the slightest flaw or deviation. The main working incline has been sunk about 135 ft. immediately under the hanging wall, cutting through an unbroken vein of ore of the grade above described all the way; from near the foot of the incline a level has been driven a distance of about 100 ft., in which the ore vein will average over 7 ft. all the length, at no place less than 7 ft. The vein seems to widen as developments are advanced, and it does not require a speculative mind to foresee in this property a bonanza which wil make Utah famous, and bring its owners princely wealth.

The original locators sold this property in October last to the present holders, who have inaugurated a systematic plan of development of the property; work is being driven on both sides of the incline and in the face. Ten men are now working in the mine, and this force will be increased as the mine shall become advantageously opened. A new boarding and shaft house has just been completed, 45 × 80, and a large house near the mouth of the incline is in process of construction, which will hold 2500 tons of ore, and is a necessity on account of the difficulty of shipping ore in the winter, and it is further necessary to store the milling ore, which largely predominates, until a mill can be constructed, which is now contemplated, but the site upon which to build has not yet been fixed.

Some of the best mining experts in the country have visited this canyon during the past season, and they all say the Bell is the boss. The present owners have also secured the claims contiguous to the Bell, and developments made upon some of these warrant great hopes of their future, and especially of one in which the Silver Bell vein is exposed, and at a depth of several hundred feet below the workings in the Bell. Altogether the present owners have eight locations in the vicinity of the Bell. These details will I believe be of considerable interest to a great number of English readers, and I trust that for the benefit of the mining interests you will publish them, as I am quite prepared to vouch for their accuracy.

Salt Lake City, Jan. 8. W. BREDEMEYER, M.E.

MINING IN WESTERN AUSTRALIA.

SIR,—In a colonial paper just received there appears a letter from Mr. Robert Septon, of Queensland, a man of great experience, and the discoverer of the Hodgkinson gold fields, for which he received a Government award, asking for some additional information as to the formation of this country, &c., previous to setting out with a party of experienced miners to prospect for gold, tin. and other metals in Western Australia. Should they be successful in finding gold in paying quantities it will be the making of the colony, and we should not be surprised at the next great "rush" being to that part a few months hence. Lead has already been worked, the ore being of an unusually rich quality, but the very low prices realised have caused many of the mines to suspend operations until better times. Copper is likewise worked, and is of a high percentage. A railway has now been completed, which will bring them into direct communication with Champion Bay, a distance of 33 miles, and I understand many are now at work again, with the best of prospects. We are glad there is a likelihood of greater attention being paid to this field of mining enterprise. That Western Australia is rich in minerals there is no doubt; all that is required is sufficient capital to develope it in a spirited manner.—*Feb.* 8. H. C. S.

RUBY AND DUNDERBERG MINING COMPANY.

SIR,—The letter of "Scrutator" in your last issue is a most amusing one. That "Scrutator" is not a shareholder in the company is evident, for no one holding the views he does would retain an interest in a company he so emphatically condemns. Neither can he have recently been a shareholder, as he has only just received the directors' report and accounts, issued in the first week of December last. That "Scrutator" takes the pains of philanthropically pointing out to others what they are too blind (in his opinion) to see for themselves I, for one, cannot believe. What then can be the object of taking so much trouble? The answer occurs to my mind that "Scrutator" has either sold that which he now wants to buy back at a cheaper price, and takes this method of trying to frighten nervous holders out of their shares to cover his sales, or wishes to convert himself into a shareholder at as low a price as possible. These tricks are too well known to affect business men, but I would warn the unwary that they are generally resorted to when such writers as "Scrutator" think a rise is imminent, and that it is high time for them to re-buy what they have sold. All sorts of groundless and absurd rumours have been lately circulated about this company; and I, for one, would advise shareholders not to attend to any communications such as "Scrutator's" without careful investigation for themselves.

Chelsea, Feb. 9. TRUTH.

RUBY AND DUNDERBERG CONSOLIDATED MINING COMPANY.

SIR,—The statements in "Scrutator's" letter in last week's Journal are so erroneous as to call for a severe correction in set terms. The shares have never been worth only "a few shillings" since the company recovered its property, after a most protracted lawsuit, ably conducted to a successful conclusion. The capital of the company is nominally 353,000*l.*, with only about 20,000*l.* debentures, or in all 12,000*l.* less than "Scrutator's" total. "Scrutator," in his statement of profit or loss, takes no notice of the costly preliminary dead work and old liabilities paid out of the working earnings to Sept. 30, which might easily have been put to capital expenditure. The 800 tons of ore so contemptuously spoken of by "Scrutator" as netting about 3500*l.* have by my calculations netted 4300*l.*, and that is not the only result of the workings, for, in addition to that amount of ore, a further quantity of 725 tons has been shipped to this date, as per weekly telegrams, already published. The expense of interest on debentures, &c., to Dec. 31 last were paid, and we have to look forward to the best working months of the year to give a fair criterion of the productive qualities of the mines.

The real output is not insignificant, being now about 170 tons per week, the Bullwhacker only having begun delivery in the middle of January, and we know the reason (bad roads) for this not having been larger. At this rate the amount of 2000 tons wired as being at the furnace and mines dumps, and ready for extraction (which "Scrutator" ingeniously omits), will be shipped in 12 weeks at present rates, while the working in the mine is daily providing and finding fresh reserves of ore. That the company "has no working capital whatever" is an absolute fabrication, as in addition to the bank balances shown in the accounts the equivalent value of 800 tons of ore represents no mean sum. The directors have wisely done everything necessary to put the Dunderberg Mines in a most satisfactory yielding condition, and have now set about the same work on the Bullwhacker Mine, from which shipments on an important scale have already commenced. It is a pity that "Scrutator" had not the courage to enunciate his views at the meetings of the shareholders so recently held.

A HOLDER OF FIVE HUNDRED SHARES.

RUBY AND DUNDERBERG CONSOLIDATED MINING COMPANY.

SIR,—In last week's Journal there is a letter regarding this company signed "Scrutator," which should not be left without a reply for it is on the face of it an attempt to depreciate the shares of this company, and it is written solely with the view to deceive and intimidate those not well acquainted with its actual position. It is dated Feb. 3, and comments on the balance-sheet "just received." These accounts are dated and were issued on Dec. 4 to the shareholders for the annual meeting held on Dec. 15, when they were unanimously accepted as highly satisfactory, and the prospects ahead were declared to be most promising. The further comments as to the accumulation of ore, real output, receipts of ore, debenture interest, and directors' fees, no working capital, waiting for something to turn up, &c., are a series of misstatements and erroneous conclusions.

Since Dec. 7, when the furnace started, there have been smelted 1525 tons of ore, value $75,770, of which about one-half, or $37,875, is profit. The quantity taken down from the mines to the furnace has been restricted, owing to the bad state of the roads and to the requirements of the ore furnace. The Bullwhacker Mine has been fairly started, and the first ore was sent down from it to the furnace about Jan. 9. This mine, with the Dunderberg, ensures a larger supply of ore than one furnace can smelt, and there is hardly any doubt that within a few months the supply of ore will be ample to keep both furnaces in full blast.

The last two weeks' deliveries of ore to furnace have been 343 tons, the consumption of the furnace 301 tons. Taking the weekly return from Jan. 4 a weekly net profit of about 84000 is being realised, equivalent to 15 per cent. upon the entire capital of the company at par (10*l.* per share), with the apparent certainty of a large increase close at hand from the amount of ore stoped ready for extraction. From the foregoing figures it is evident that the directors have it in their power to pay a dividend next month should they deem it expedient to do so. I would only add further that any share-

holder can, on application at the company's office, ascertain whether my views are correct or not; and this, I suggest, any shareholder should do who may have read the misleading statements of "Scrutator." SHAREHOLDER.

RUBY AND DUNDERBERG CONSOLIDATED MINING COMPANY.

SIR,—Now that "Scrutator" has shown the present position of this company, I hope you will allow the subject to be ventilated in your valuable columns, and thereby benefit the shareholders, and very likely save one or more American mining companies from joining the number of such companies in the Chancery Division of the law courts. If you will allow me, I will just show in a few words the position of the company, which is by no means beyond cure, and then suggest the remedy. In 1879, when the litigation with the vendors was finished, we were invited to subscribe 12,000*l.* in debentures, 2000*l.* of which was to pay off our existing debts and 10,000*l.* as working capital to develope mines. Having taken a large share in this operation, I looked to the balance-sheet to ascertain what had become of the money. I find the following answer in the balance-sheet:—Law costs and agencies, 8557*l.* 2s. 7d.; and the rest went in directors' fees, salaries, and so forth. The directors in their balance-sheet simply charge this sum of 8557*l.* 2s. 7d. to capital account.

Lawyers or agents are, unfortunately, necessary evils in the case of American mining companies, but they are certainly not "permanent improvements," and their costs belong to profit and loss account; had this sum been properly charged there, the loss shown by the balance-sheet would have been nearly 12,000*l.*, instead of 2799*l.* 17s. 1d. The result of the year's mining was very poor indeed, and I should like the directors to explain what has become of all the wonderful discoveries which were wired from the mines from May till July, and on the strength of which the shares reached those high prices. The real weakness of the company consists in the utter absence of all working capital or resource.

Everybody knows to what sort of attacks American mining companies are exposed, and this company, unless it is placed upon a sound basis, will fall a prey to the first attack or accident that will occur. Smooth talk and the expression of good hopes for the future will not alter this fact, but if a reserve is formed at once, and the absurdly inflated capital reduced to a moderate compass, the company, which has unquestionably valuable property, may still pull through. What I would suggest is that the capital be reduced to 60,000*l.*, giving every shareholder in exchange for a 10*l.* share a share of 2*l.*, with 1*l.* paid thereon, leaving 1*l.* per share uncalled. This would give the company a reserve of 30,000*l.*, to be called up when occasion arises. If a better plan can be suggested by all means let it be done, but no time should be lost. ONE LARGELY INTERESTED.

Maida Vale, Feb 10.

SENTEIN MINING COMPANY.

SIR,—The shareholders in this mine have reason to be satisfied with the position the company has already attained. Now that the new and improved mechanical appliances for treating the ores have been completed, at a cost of several thousand pounds, and found adequate to deal with the enormous increase in the output of ores from the mine, the most sanguine expectations which have been entertained of the further development will be realised, more particularly as the company is now under the supervision of Messrs. John Taylor and Sons. The company has within the last six months sold large quantities of ore, amounting to 1500 tons of superior zinc and 500 tons of silver-lead, realising approximately 11,200*l.* The sale for last month was the largest yet made, yielding upwards of 3100*l.*, and in future it is computed that the monthly returns will be 200 tons of lead and from 400 to 500 tons of blende, the profit on the sale of which will enable the company to pay large dividends, as the undertaking is not overweighted with capital, which consists of only 50,000 shares of 1*l.* each, and to pay dividends at the rate of 50 per cent. will only require a profit of a little over 2000*l.* monthly.

When the former workers were compelled to suspend operations on account of the Franco-German war in 1870 they were making fabulous profits from a monthly return of 300 tons, and so easily was the lead obtainable that they did not trouble about the zinc. There is undoubtedly a brilliant future in store for the Sentein Company, and it behoves the shareholders to be cautious about parting with their shares, and it may interest them to know that parties in the immediate vicinity of the mine have recently been buying largely.

London, Feb. 10. MINING AGENT.

SENTEIN MINING COMPANY.

SIR,—I am glad to find that Mr. Green considers his machinery capable of dressing all the ore that can be brought to it, and that it was made and designed by him to treat as much as at least upwards of 80 tons of orestuff per day, or in a working month of 26 days upwards of 2080 tons. This quantity would, I believe, give something like 900 to 1000 tons of clean ore for market, if not more. If his machinery does this year produce these large quantities of ore for market each month, I believe every shareholder will be satisfied, and that the mine will pay in 1881 good dividends. The new machinery is now on its trial. Several thousand tons of broken ore are now at the floors ready to be dressed. The practical question is—Can Mr. Green's machinery dress 80 tons at least each day it works? A large part of the stock of orestuff—the carbonate—can, I believe, be dressed with great ease. This makes the terms of the trial still more favourable for the new machinery. Although the wire tramway does not bring down ore at anything like the rate of 80 tons per day, at present the stock of orestuff at the floors is large enough to show what the new machinery can do, and probably would take more than six weeks to exhaust. Of course the quantity of clean ore depends on the quality of the orestuff dressed. If the new machinery could only turn out 600 tons of clean ore each month shareholders might, I think, fairly complain, unless this were due to the poor quality of the orestuff. No sale of ore has been reported in the *Mining Journal* since Jan. 15. I, therefore, fear the sale of 600 tons of ore, then reported as made on Jan. 12, was for the two months of December and January. The last sale before that was, I believe, on Dec. 4.

As to the "huge cost," Mr. Green will find this was stated in a report of the mine in the *Mining Journal* in last November. The accounts for the year 1880 will, no doubt, be shortly circulated, and will show the precise sum. I am glad to find the amount paid to Mr. Green is only 2200*l.* Like him, I find it difficult to believe that 4800*l.* or anything like it has been spent in carriage, materials, and erection, even with very bad management. But such was the statement. As to the "extraordinary delay," the circular of the board, dated July 16, says—"The first section of the new machinery has been at work a month, and gives great satisfaction. The second should be ready in about three weeks, and the third in ten weeks." I believe the first section was to have been ready by May 1, and the second by June 1. In fact, the first was ready about the middle of June, the second about the end of August, and the third about the end of November. If this be so the delay appears very serious indeed. If this machinery can do what is claimed for it I think it clear that "extraordinary delay" has seriously lessened our profits for 1880. As to the value of the old machinery, the directors' report, dated January, 1880, stated that in June, 1879, "one set of jigging machinery was completed and put to work, and a second set afterwards added, which are now capable of producing 30 tons of dressed silver-lead ore and 45 tons of blende a week;" and they said also that during the five months, June to November, 1879, "upwards of 500 tons of dressed silver-lead ore and from 700 to 800 tons of blende have been produced." The accounts for 1879 showed that the ore sold and in transit realised 5807*l.* 17s. 9d., and that the company paid a dividend of 10 per cent. (or 3200*l.*) for the year. This shows conclusively that the old machinery could be worked at a good profit; it dressed all the lead and blende which was sold till June, 1880; it was bought in 1878 and 1879, and cost a considerable sum. If bought so recently could it already have become so worthless as to be a mere source of loss? Had we had no new machinery is there any ground for thinking the company could have paid for 1880 so little as 10 per cent., which was paid in 1879? So far I regard our new machinery as merely a source of loss; I can only hope it may prove this year the source of large profits. I thank Mr. Green for his letter, but I do not think that he has shown any reason for the disuse of the old machinery, one sole source of returns up to last June.

Will Mr. Green kindly answer me three questions?—First, have the board stated their full satisfaction with the new machinery in all respects? If so, we ought to do splendidly this year. Second, is there much less loss of lead and silver with his machinery than with the old? Some lead and silver, I know, must always be lost. Last, why should not the old machinery be used as well as the new if there is ore enough for both, or if not for the galena and blende, then for the carbonate? DISSATISFIED HOLDER.

Lincoln's Inn, Feb. 9.

PIERREFITTE MINE.

SIR,—The report of this mine appears to me to be a little ambiguous sometimes; the lode is reported to yield, for instance, "6 tons of lead ore and blende per fathom." Now, it is evident that this way of putting it does not afford the maximum amount of information, for the reader can form no reliable estimate of the money value of the lode, since the proportion which the one ore bears to the other is not stated. If lead ore and blende were of equal value this way of stating the yield would leave nothing to be desired, but it happens that the first-named mineral has about three or four times the value of the other.

Again, when the report states that 240 tons of ore have been broken from the stopes, &c., is it understood that this is dressed ore, or is it what in England is usually termed orestuff—that is, crude ore? Personally I should be glad if the writer of the reports on this valuable mine would in future kindly give a little fuller information.—*Feb.* 8. ONE INTERESTED.

THE PANULCILLO COPPER MINING COMPANY.

SIR,—The latest information respecting the above company cannot fail to be most gratifying to the shareholders. It is to the effect that after paying interest on debentures and London charges there remains a balance of 14,500*l.* This will be sufficient to pay a dividend of 5s. per share for the half-year (being at the rate of 12½ per cent. per annum), leaving a balance of 2000*l.* to be carried forward. Should such a prosperous state of things continue we may reasonably hope to see the shares quoted at 10*l.* very shortly.

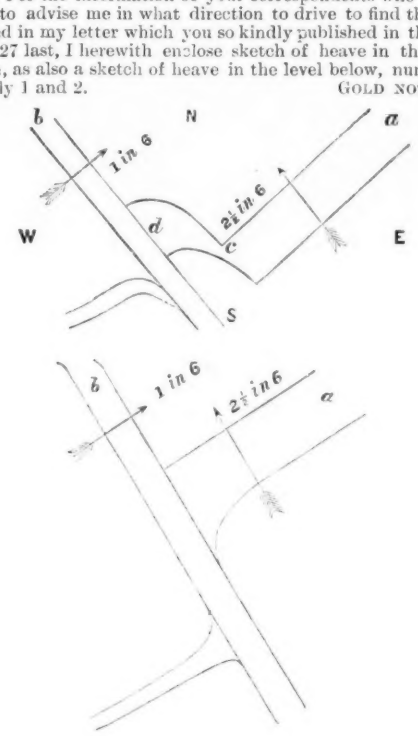
Chiswick, Feb. 10. SHAREHOLDER.

THE CAPITAL GUARANTEE SOCIETY.

SIR,—In the prospectus issued by the Gold Mining Association of Canada it is mentioned that the directors have entered into arrangements with the Capital Guarantee Society to give to each subscriber for five shares fully paid a bond of that society assuring the ultimate return of the amount paid for the said shares. Can any of the *Mining Journal* readers inform me upon what terms this guarantee was obtained, and state the commercial status of the Guarantee Society?—*Holloway, Feb.* 9. H. W. HIGGINS.

SLIDES AND HEAVES.

SIR,—For the information of your correspondents who were kind enough to advise me in what direction to drive to find the lode, as requested in my letter which you so kindly published in the Journal of Nov. 27 last, I herewith enclose sketch of heave in the level in question, as also a sketch of heave in the level below, numbered respectively 1 and 2. GOLD NOT GILT.



N.B.—By a mistake of the engraver the two figures have been cut to different scales, but the nature of the change will be understood by every miner.

MAGNETIC SEPARATION OF ORES.

SIR,—A few weeks ago a notice was published in the *Mining Journal* containing a description of separating ores by the aid of magnetism. I should, therefore, be glad if some of your practical correspondents would state the relative advantages of this and of Mr. Edison's system, which is at present attracting attention in America. I do not know how many years Edison's process has been invented, but should certainly like to know which process is the more economical in use. Theoretically the suggestion appears very good, but I fear that in practice the results which the inventors anticipate would not be realised. It is stated with regard to Edison's arrangement that a hopper, preferably provided with an adjustable valve orifice, and arranged to feed the mingled substance in a thin, broad stream, is supported in any suitable way several feet (more or less) above a bin, which is partly immediately under the feeding orifice of the hopper, so that material falling from the hopper would, under normal conditions, fall therein. Between the hopper and the bin, and to one side of the straight line connecting the two, is a magnet having a polar extension, whose face is of a length equal to the width of the feeding orifice of the hopper. Underneath the magnet and by the side of the bin is another bin for the reception of the magnetic substances. The material from the hopper tends to fall in a straight line. As it passes, however, within the influence of the magnet the magnetic portions are attached thereby and move towards the magnet, which is so placed with relation to the falling material that it cannot be attracted entirely to the magnet before gravity has carried it past. In other words, the trajections of the falling magnetic substance is altered, it moving for a portion of its fall in a line, which is the resultant of two forces—gravity and magnetism—acting upon it.

There can, I think, be no doubt that with certain classes of material the separation would be effected, but the great question is at what cost. In practice the magnet is connected to the battery or other source of electricity by wires, and beneath the hopper and magnet are bins similarly arranged to the bins of an air separator, but of course the magnetic ore is attracted so that the operation is the converse. Supposing, for example, the hopper to be filled with material partly magnetic, partly non-magnetic, the material in falling would by force of gravity fall. The magnetic portions, however, are attracted towards the magnet, but before they are brought over out of their path sufficiently to touch and cling to the pole, gravity has carried them past, consequently they merely fall into a separate bin. It is evident that the material to be worked in this way must either be perfectly dry or it must be worked under water. Damp sand or pulp could not be worked. The inventor says the whole apparatus may be placed in a tank of water, in which case the tendency to clog in the hopper and cling together when falling is entirely overcome by placing the magnet in water; or he thinks it would work if the hopper alone were placed in water, and the magnet entirely outside, or the body outside, with its polar face extending through the side of the tank.

Comparing this arrangement with that described in the *Mining Jonrnal*, each appears to have some advantage. I should think that by Edison's process a larger amount of mineral would be treated, and probably more economically per ton of crude mineral, but I should not expect the separation to be so perfect, and hence a ton of cleaned and marketable ore might cost more by Edison's than by the other. These, however, are the points upon which I desire information.

Tavistock, Feb. 7. DRESSER.

COKE OVENS.

SIR,—The peculiarities of the system of Mr. Henry Aitken consist in forcing air, either cold or heated, into the upper part of the oven through numerous apertures in jets, so as to burn within the oven the gases exuding from the coal. The carbonising operation is thus effected without undue waste. The proposed modes of conducting the operation are various. The inventor suggests a new arrangement of bottoms, whereby successive charges of coal can be coked by lowering the bottom after the carbonisation of the first and subsequent charges. To this he has recently added a method of extracting the ammoniacal water, tar, and oils. So far not much practical experience has been had, but the advantages are stated to be that harder coke is produced than from the ordinary beehive oven, that the percentage of coke is considerably increased, that the output per oven is greater, and that the ammoniacal water and oils are taken off without injury to the quality of coke. The attempts hitherto made to effect this purpose have been unsatisfactory, because retort ovens have been used; the heat has been applied externally, and the coke made has been inferior. The great waste attending the ordinary method should not be allowed to go on without strenuous efforts to remedy it. The utilising of the valuable products of ammonia and oils and the waste heat would, if generally adopted, produce a large revenue from sources hitherto almost disregarded. As regards the extraction of ammonia, tar, and oils, there are not at present any ovens on this principle in operation, as far as the writer knows.

The ovens originally constructed on Mr. Aitken's principle were employed simply for coking, without utilising other products. But the air was thrown in, either by the draught of a chimney or a fan, by pipes through the crown into a chamber, and from thence was dispersed by numerous jets over the upper portion of the oven. These pipes were highly heated in a flue built around each oven, ten or more small openings connecting the interior of the oven with this flue. The heated gases might be used for raising steam, heating pipes, and other purposes

The improved ovens may be either beehive or oblong shaped; any number may be built in a double row, the air being forced in under pressure by a fan. The blast-pipes are designed in different ways, being generally placed in a coiled form in the flue or combustion chamber running round the oven, rising through the top so as to enter the crown of each through openings, each pipe being connected to numerous jets, so as to disperse the air over the burning coke, or the main pipe may be laid in a flue built between a double row of ovens, and a branch pipe carried round each oven, having connected to it twelve sets of jets. The air is highly heated; the pipes being made in a winding form so as to effect this purpose more completely. The admission of air into each oven is so regulated that it only burns the gases, without consuming the solid carbonaceous matter of the coal.

Another feature of this system is that the bottom of the oven can be raised and lowered to any desired position by means of a hydraulic ram, or racks and pinions, placed in a well underneath it. The bottom may be made of iron, and covered with refractory fireclay. When it is in its highest position it is ready to receive the first charge of coal. When this is sufficiently coked the ram and bottom are lowered, and another charge of coal is laid on the coke, and so on, until the bottom reaches the lowest position in the chamber, when the bottom and the coke in a mass are run out on rails to the coke bench.

The advantages claimed for this method are rapidity of burning; the heat from the one charge of coal after being carbonised operates in coking the succeeding charge, so that successive charges of coal are coked with an economy of time and fuel. The high heat obtained permits the coking of many coals otherwise not applicable. The coking of the coal in separate thin layers may also be effected by adapting the top of the oven to be raised and lowered, the coal being added as in the former case, only the bottom is in a fixed position.

These improvements are applicable to ordinary ovens as well as to those just described. It is stated when the tar or coal oils and ammoniacal water are taken off the coke produced is more dense and in larger pieces, while the percentage is increased about 1½. The most simple form of oven on this principle is of the beehive shape, with three flues under the bottom about 4 inches square. These are covered with perforated tiles. The three flues unite into one pipe near the door, which pipe is connected with the condensers. A mechanical exhauster is required to take the gases off, and also to force the non-condensed gas after being deprived of the water and tar oils through another pipe into the upper portion of the ovens. Oblong ovens can, however, be used. A modification of the latter is the through-and-through oven, provided with a drawing apparatus, consisting of steam-engine and boiler and framework whereby the contents of the oven are run out on rails in a mass at the completion of the process. The object is to utilise the resulting products, and also to permit of the treatment of semi-coking coal. M. E.

DOMESTIC FIRES, AND SMOKE PREVENTION.

SIR,—The recent investigations as to the causes of thick black fogs and of the generally murky state of the atmosphere here and in London, have called special attention to the reckless waste of fuel and excessive production of smoke in the majority of domestic fireplaces and kitchen ranges. This is one of those exceptional cases where public and private interests coincide, and on this ground I request your permission to point out the elements of good design and also some of the common faults in open fire-places, incidentally indicating how easily many bad ones may be materially improved.

The comparative economy of an open fire depends on three elements:—1st: That the fuel be thoroughly consumed and its full heating power thereby evolved; 2nd: That the heat evolved by the fuel be effectually transmitted to the room by radiation and conduction; 3rd: That no excessive draught be made through the room to the chimney.

Thoroughly to consume the fuel, it must be maintained at a very high temperature; in fact a fire must be "kept warm" by a surrounding of non-conducting material, this material tending also to equalise the heat during the variations from having fresh fuel put on to being in full glow. Therefore we should select fire-places of compact form, with thick fire-brick sides and back, in preference to those with iron backs and projecting fronts. Thin front bars of wrought-iron are preferable to the usual thick cast-iron bars, as they do not intercept so much radiant heat. The bottom of the fire-place should be somewhat hollowed or basin formed, with a grid for about one-third of its area to suit our local coal; with very pure fuel no grid is needed, the ashes falling out by the lowest front bar. The back above the level of the top bar should be slightly inclined forward, and formed of fire-brick, so that the flame and heated gases from the fuel may cling to its surface and give it an intense heat, thereby materially preventing smoke by promoting the combustion of the gases otherwise wasted. This heated surface also throws out much radiant heat to the room, and forms a sort of inverted funnel to the chimney opening.

Nearly all common fireplaces, even the antiquated register stoves, can have their defective backs removed and replaced by neat fire-clay slabs or bricks to this improved form. The front of the grate should be not more than three inches in advance of the chimney opening, as otherwise the natural rising tendency of the heated gases can only

be overcome and the smoke drawn back into a recessed opening by an excessive and wasteful draught through the room into the chimney. With a chimney opening vertically over the fire, 18 in. width by three inches from back to front, is sufficient for even a large open fire; and half that area of opening would suffice for a small one. By this means the draught through the room is minimised, and as all air passing through the room requires warming during its passage, the heating power required is proportionately minimised also. The fire-place should not project into the room, as then it is subject to cross draughts, causing smoke to puff out; and the heat is more equally spread from a somewhat recessed fire-place. Glazed tiles form the best surface between fire-grate and mantlepiece; if iron be used it should be backed up by brickwork, except when air-heating chambers are provided in the jambs to supply warm air to the room. The mantelpiece should not have too wide a shelf, as that would hinder the due circulation of air, and thereby of conducted heat, from about the fire-place. The fashionable wooden mantels with high shelves, &c., are thus preferable to the old fashioned broad and low marble shelves. Without unduly diverging into the complex subject of ventilation, I may conclude my suggestions by pointing out that every cubic foot of air that passes up the chimney must first be admitted through the room. Very few domestic fires and flues are duly supplied with air, so they are compelled to steal their supplies through every chink of window, door and floor. The temperature of the room may be remarkably equalised, and a pleasant sense of freshness given, by having an air-supply brought into the room over the mantelpiece, and there dispersed in several upward and inclined streams, so that the cool fresh air mingles with the warm air rising from about the fire-place and spreads imperceptably throughout the room, eventually returning to feed the draught of the fire and flue. With your leave I will presently offer some similar suggestions in reference to kitchen ranges and boilers. J. CORBETT,

Feb. 5. Engineer to the Manchester and Salford Sanitary Association.

BOILER EXPLOSIONS AND THEIR PREVENTION.

SIR,—Although it is generally felt that no advantage would be derived from the official inspection of steam boilers there are few who do not recognise the benefit likely to accrue from a searching Government investigation when an explosion has occurred, and it will be much regretted that it is not proposed to extend the Act to boilers used for domestic purposes—the so-called circulating boilers which private householders continue to use because it is only their servants' and not their own lives that they jeopardise, being more dangerous than any of the class with which it is proposed to deal. The use of these circulating boilers should not only be strictly prohibited, but in case of the explosion of any one of them the manufacturer and the tradesman who fitted it up should be held criminally responsible for the consequences. To place such dangerous implements of destruction under the control of servants untrained to the use of steam power is also culpable on the part of employers, and an attempt might even be made to reach them by compelling them to pay compensation to the sufferers under some enactment corresponding with the Employers' Liability Act. This, however, must be the subject of another bill, for the present distinctly states that neither boilers used for domestic purposes nor in the service of her Majesty nor on board a steamship having a Board of Trade certificate.

With these exceptions the Act will certainly insure a better investigation than heretofore. It is provided that on the occurrence of an explosion the owner or user must send notice to the Board of Trade within 24 hours, stating the day and hour of the explosion, the number of persons injured or killed, as well as the purposes for which the boiler was used, and generally the part of the boiler that failed, and the extent of the failure. If default is made in complying with the requirement of this section, the person in default shall on summary conviction be liable to a fine not exceeding 20*l.* On receiving this notice the Board of Trade may, if it thinks fit, appoint a competent and independent engineer, practically conversant with the manufacture and working of boilers, to make a preliminary enquiry with respect to the explosion. If it appears to the Board of Trade that a formal investigation is expedient the Board may give the necessary directions. These formal investigations are to be made by a court consisting of three commissioners, two of whom must be competent and practical engineers specially conversant with the manufacture and working of steam boilers, and the third a competent lawyer. The court is to be presided over by one of the engineering commissioners, the selection being made by the Board of Trade.

The Court of the Commissioners is given all the powers of a Court of Summary Jurisdiction—that is to say, the same power as is exercised by any justices of the peace, metropolitan police magistrate, stipiendary magistrate, sheriff, sheriff substitute, or other magistrate or officer, by whatever name called, who is capable of exercising jurisdiction in summary proceedings for the recovery of penalties, and it is provided that any person summoned before the Court not being the owner or user of the boiler, or in the service or employment of the owner or user, or in any way connected with the working or management of the boiler, is to be allowed such expenses as would be allowed to a witness attending on subpœna before a Court of Record; and in case of dispute as to the amount to be allowed the same is to be referred by the Court to a Master of one of the superior courts, who, on request under the hands of the members of the Court, will ascertain and certify the proper amount of such expenses.

The engineer making a preliminary enquiry with respect to any boiler explosion, and the court making a formal investigation with respect to any boiler explosion, is to present a full and clear report to the Board of Trade, stating the causes of the explosion, and all the circumstances attending the same, adding thereto any observations thereon, or on the evidence, or on any matters arising out of the investigation which they think right to make to the Board of Trade, and the Board of Trade is to cause every such report to be made public in such manner as it thinks fit. From this it would appear that the investigation will be quite as searching as in the case of colliery accidents, whilst the circumstance that the investigation will take place before two engineers, assisted by a lawyer, who could probably be advantageously replaced by a practical stoker accustomed to the use and management of steam, will afford some promise of the commissioners and the witnesses understanding each other, and thus ensure satisfactory results. VAPOUR.

Manchester, Feb. 9.

IMPROVED RAIL JUNCTION.

SIR,—Permit me to describe an improved arrangement invented by Mr. Max Gossi, the object of which is to replace the fish-plates and chairs at present in use to connect the rails, by an iron shoe less costly, more easy to lay down, and supporting the extremities of the rails in such a manner as to prevent completely the fall which is always produced at the place where the ends of the rails are joined when the wheels pass over them.

The apparatus is composed of an iron band, flat or corrugated, from 20 to 30 centimetres wide, which covers completely the foot of the rails at the point of junction over a distance of 10 or 15 centimetres. Instead of a piece of flat or corrugated iron, rolled steel or even cast-steel or cast-iron could be employed. To strengthen the junction the two wings of the shoe could be enlarged a little at the extremities to make them clasp the neck of the rail. The shoe is made to slip with friction over the ends of the rails. In constructing the track the shoe is slipped over one of the rails until it does not project from the end; the second rail is then applied to the end, and the shoe is slipped over it until the length is equal on both sides of the junction. To prevent the slipping of the shoe a hole, square or of any other form, 10 to 15 millimetres in diameter, may be made in the end of the rail corresponding to a smaller hole made at the upper part of the shoe. A rod of iron corresponding in thickness with the hole is placed in these holes, and can be an eye bolt, a screw bolt, or simply a piece of any iron whatever, sustained on one side by a head or flange, and on the other by a nut. It is desirable that these holes or notches have a section more long than wide. The feet of the two rails are thus imprisoned in the same shoe; the two ends of the rails are supported by the lower flange of this shoe, which is directly supported upon a wooden or iron sleeper, the system being applicable equally well to every system of railway, and the surrounding parts of the shoe maintain the rails in an absolutely rigid manner. The sliding of the shoe may also be prevented by maintaining it in the notch of the sleeper, by means of a wood screw or a chair similar to those which are employed to fix the rails to the sleeper.

When it is necessary to replace a rail, the operation is very simple. It suffices to raise the rails slightly at the point where they are joined, to drive back the shoe until the rail to be removed is disengaged; the old rail is now removed and the new rail put in its place, the shoe is driven back over the latter, and the whole is put down again. To replace a shoe the operation is exactly similar. Lastly, the rails are fixed in the ordinary manner by means of wood screws or bolts.

The advantages of this system are numerous; the rigidity of the track is much greater, the rails are perfectly supported at their point of junction, whilst there is as little shock from the passage of wheels as if the track consisted of a single rail; the rails themselves need not be pierced, which renders them more solid. The replacement of the rails and the construction of the track are rendered much more easy, the track is much more solid and stable, This system can equally be employed for broad gauge railways and for shop railways, whatever system of sleepers be employed. The construction of the railways requires a much shorter time than with the system of fish plates at present in use. E. PICKARD, Patent Agent.

Chaussée de Charleroi, Brussels.

THE LEAD TRADE.

SIR,—Since our last the market has remained quiet, and the only sales reported are—230 tons rich Spanish, at 15*l.* 5s.; 100 tons 13 oz. ditto, at 14*l.* 15s. In London—300 tons Greek lead, at 14*l.* 17s. 6d.; 300 tons ditto, at 14*l.* 15s. Ordinary soft lead, except at very low prices unsaleable.—*Newcastle-on-Tyne, Feb.* 10. STOCKS.

MINES NEAR THE INDIAN QUEEN.

SIR,—I visited Penhale and Barton United to-day, and was much pleased to see the rich specimens of the lodestuff shown by the agent. I had a sample "vanned," and found the yield to be about 50 per cent.! Of course we must not expect that the average yield will be so high; but I was informed that the general yield is very good. The company made a profit in driving the adit, which is only about 10 fms. deep. This a large and splendid property—idle 40 years till lately.

Tolldish Mine (tin) is likely to do well. I strongly recommended this mine a few months ago, and I am confident that the workers will realise my predictions. Messrs. Brown Brothers, St. Austell are the principal adventurers—or they have a large interest in it.

Trugo Mine (copper) is very highly spoken of, and so are the Parka Mines. A sett of Wheal Cock is taken up for working, and also some others in the locality. The district is good for both copper and tin, and I look forward to its becoming extensively developed. There are numerous quiescent mines in the district which warrant further prosecution.—*Truro, Feb.* 9. R. SYMONS.

KIT HILL GREAT CONSOLS, &c.

SIR,—This company is fully formed, and that in a very short time. An applicant for 200 shares told me, at Callington, that he could have an allotment of only 20. That fact shows the estimation in which the property is held. The project to tunnel the hill is a good one, as it will intersect numerous lodes in its course. From the mouth of the tunnel to the summit of the hill there is said to be a rise of 120 fms. When I take my levelling instrument to Callington I intend to find the exact rise. Lady Ashburton is yielding fine specimens of silver ore, which I observed in the lode a few days ago. Silver Hill, contiguous at the east, is to be worked. A tunnel has been driven about 80 fms. northward, and is to be continued in that direction to intersect all the lodes in the sett—about nine in number—embracing those of Newton Silver Mine, now so prosperous.

Truro, Feb. 9. R. SYMONS.

COUSIN JAN'S CHAT.—No II.

"Well, Jan, the laast time we mit we taalked 'bout dynamite. Sence then I've ben thinking 'bout Toby Tooker. Praps thee'st never heerd of 'un? Why a was a local preacher, one of the fust in Cornwall, and lived 'bout the meddle of laast century. In one of hee's sermonts he remarked, ef all the stones in the world war put ento one great big stone and then cast ento the say, what a ploughya et wed maake." "But what es a ploughya?" axed Uncle Will. "Well, et means a splash, a crash, a splutter, and tear, and a rep, a plunge, a sudden shock like a eearthquaake, and all this year tremenjious violence wed send a waave that wed be sen over all the world. This he meant that preaching the Gospel wed visit every land and every people, and et es being done; but this year ploughya is sen if we've only eyes to see un everywhere. I'll only begin with Bonaparte. Hes doings was a ploughya in and out of Europe. Look at the railway system, and the telegraph and the steam-boat system. What a ploughya; and long afore then, what war printing but a ploughya. What es the newspapers and periodicals and cheap books but a ploughya. Then look at gold mining in California and Australia; that's a ploughya; that will never be forgotten to the end of time. And hev we not sen in the midst of all the commotion or ploughyas, as Toby Tooker said, a great wonder that Cornish mining should stand all the several various shocks. What dos't ee caal um but earthquakes. Why, look at Cornwall in the fust place streaming fur ten, then working lodes as hard as flint, weth no powder or steel, and blasting weth quicklime, and then weth a dry deal stick jammed and made wet, and cribbing out bits of granite weth feather and tearers, and gads and picks, then powder; and now what a ploughya es made with dynamite. Dos't thee year our hole go off just now? Why et shook all the owld pleace. Aw! What would owld Toby Tooker say ef he heerdn't sich a ploughya, as he never dreamed of reck'n." Here Will axed Jan ef he had not a few smale ploughya's more suited to a friendly chat, which wed'nt frighten nervous fella's like he." After this interruption Jan said, "Dos't thee ever year of a man weth a red head, bright red, who seed a woman in the market, and the woman axed 'un ef he was born pon a rejoicing day. 'How?' ses he. 'Why, because theest got a bon-fire pon thee head.' Will laughed, and ses, "Jan, dos't thee ever year of a pitman in Wheal Prosper who was hated? Nowsomever he got hurted, and was laid up for a longful time, and when a comed to bal again, a man said to un, 'Thee'st got better again.' 'Iss,' ses he 'Well,' ses the man, 'there was plenty of tears shed the day thee'st was hurted.' 'I doant bl'eve et,' ses the pitman.' 'Et es true,' ses the man. 'Thee'st a false man,' continued the pitman angrily. 'Well,' ses the man, 'et war'nt because thee was hurted, but because thee warn't killed. "Oh!" ses Will. "Well," then ses Jan, "owld Molly Polgrean was thoft to be spending a passel of money, and Billy, her husband, gave sexpence to the crier to cry down her credit. At the sound of the bell Molly and her sister rushed forth to year. Molly did'nt catch what the crier said toal, but her sister heerd'nt, and gave Molly sich a duff in the ribs, and said, 'Molly, it's thee.' Exit Molly. Well then, one more. The owld Dobbs had a boay that sucked hes thumb. Hes faather said 'Ef thee'st stop that (for a was a big boay) I'll give thee a penny loaf.' The boay ate the loaf, and then sucked hes thumb again. So says the owld Dobb after that, 'I say trust no man alive.'" "Well, but let's year about the smale ploughya's, Jan." "Well, Will, thee'st knaw the man-inyun es a thing that es fine and comfortable like, and a grand invention fur we miners, and shud be in every deep mine by right; there's time saved, and strength too, fur when we goat to clem so, we caan't work as well underground; that's one smale ploughya. Then there's the rock-borer, that da turn over so much stuff; he's a ploughya; bnt, Jan, I doan't half like he, fur a puts down labour for we miners. Where there's a rock-borer there edn't so many men wanted." "Go'st long weth 'ee, Will, thee'st all for owld fashioned things me sonny; there's room enuff for all them pon the dressing floors. Why, there's the stone-breaker, he da chow up the stones in some style; that's another smale ploughya; and machine jiggers, mun, that's another grand improvement. Aw, what a defference there es now and when I was a boay in frocks. There was hand jiggers and spaling in them days me boay, a much slower process of dressing and getting through great piles of ore and traade. Now, Unkel Toby's wave shud fust begin in the inyunhouse by heving the best steam and water guages, and smale prizes might be given to the inyun-man fur the most work done on the least quantity of coals, and general cleanliness and attention to using a proper quantity of oil and no waste. Pitmen and shaftmen shud be encouraged for strict attention to the least possible friction and good condition of pumping gear, &c.; also, prizes shud be given fur the best steel wire-rope, and particular attention paid in keeping shafts in good repair, skips, &c. All these would be ploughya's in the right direction fur the benefit of all concerned." "Iss, Jan, but there's another big ploughya you han't a mentioned yet, and that's the laast election; all of a suddent he da come." "Well, Will, we hope the wave will go on making trade and commerce flourish at home and abroad." ONE AND ALL.

THE CALLINGTON DISTRICT AND ITS MINES.

SIR,—I am pleased to see things so changed as regards mining in this district. Every day brings us some fresh news. Nearly all of the ground between the new bridge at the Tamar river (Gunnislake) and the new bridge (Callington) on the River Cynor is taken up in mining leases. I saw some gentlemen yesterday who informed me they were interested in Callington Consols—*alias* the Florence, Tonkin, and the Pengelly sett combined. I wish them every success. I mentioned in one of my letters not long since that the Wheal Tonkin part of this property had produced more tin than any other mine I knew for the number of fathoms of ground explored. Wheal Florence returned the largest number of tons of copper ore from the adit level for the number of fathoms of ground explored of any mine I know. The Pengelly portion of the property anyone knowing the property cannot but form the same opinion they have got the Wheal Fortune—late Queen Mine—silver lode, now producing so much silver, the Dreamer's and two other lodes that are nameless, with the Lady Ashburton silver lode, and the Silver Valley tin lode going through this part of the grant, with two splendid cross-courses as ever seen going through the whole property from north to south, one about 20 fms. west of Verran's shaft, the other a little to the west of Soul's shaft at Wheal Florence, both underlying west, the strata being so mineralised I believe large deposits of silver, tin, and copper ore are certain.—*Callington, Feb.* 10. JOHN BUCKINGHAM.

LADY BERTHA MINE.

SIR,—As we so very rarely see in the *Mining Journal* a report from the Lady Bertha Mine the subjoined extracts from a letter received on Feb. 5 from the secretary will be of interest to the shareholders and the public generally. Mr. Wright states, "I am happy to inform you that Lady Bertha is being quickly unwatered, and the stopes and lodes in the 10 and 20 fm. levels are yielding large quantities of arsenical muudic, also copper; by the end of this month the water will, I trust, be forked to the bottom, when we anticipate good discoveries and returns." A SHAREHOLDER.

THE MINES OF NORTH WALES.

SIR,—On reading the *Mining Journal* some weeks back I observed that your North Wales Correspondent propounded as I thought a very sensible question with respect to the produce of lead ore in a given area for a given time. I have not yet seen any answer to it. I feel sure it would be an interesting investigation to any of your readers who understand such matters to enter into the calculation, and it would be equally pleasurable to your ordinary readers to be made acquainted with the probable produce as per data given of the district named. I throw out these remarks as hints to gentlemen qualified in these subjects. I am not so qualified, but would, nevertheless, like to see the calculation. I would also here like to ask a favour of your North Wales Correspondent. Would he favour your readers from week to week as occasion may serve with a popular description topographically, stratigraphically, geologically, lodographically, and mineralogically of the principal points of mining operations past and present of that part of the country covered by his descriptions between Talargoch at one end and Minera at the other, with a stretch of country in a line ten miles on each side of the places named as far as practicable, taking the Halkyn Mountains, the Moel Vamma range, the Mold Mountain, and Hope Mountain ranges specially into account, with some description of their financial and commercial operations and values at different times in their histories? I do not wish to make any further suggestion. I dare say, however, your Correspondent may improve upon my ideas; if so, I shall be glad, and will welcome anything that may lead to good results.

Feb. 8. LLANARMON.

MINING IN THE ST. BLAZEY DISTRICT—No. V.

SIR,—Passing along by Scobels, the resumption of which could not fail to be a most worthy commercial enterprise, we soon touch the boundary of Mount—better known as Capt. Barratt's "Twopenny Hill"—a mine which in a few years upon a small outlay paid a wagon load of gold in net profits. I recollect meeting with a gentleman who told me that when Austin Treffry was about to resume this trial he offered him a small number of shares, which he agreed to accept, and that the first of his hearing of the investment afterwards was the opening of a letter one morning and finding a cheque for a good round sum, being his quota of net profits on the declaration of dividend. This mine was brought to a close, as Capt. Rich truly observes, by the suspension of tutwork drivages. It was also owing to the suspension of tutwork sinkings, and the want of an expert handling of the various tribute departments, &c.; in short, by what Cornish people characterise as "old women's management," where incompetency, self, and "Aunt Betty" rule supreme. The resumption of this mine could not fail to become a valuable commercial business, and the outlay need not be a great sum with proper management. If Capt. John Puckey had not died this would not have ceased working, and to this day would have undoubtedly remained a dividend paying property; but after Capt. Puckey's death there was but little or no managing ability in the men who succeeded, and the more subordinate agents, who were kept back, were, of course, not consulted, and with the first succeeding panic this yet great property became a total wreck.

This "Twopenny Hill" stands to the east of the Crinnis Mines, and was long observed by the miners working there to be a piece of ground of great prospective value. Ned Andean and other practical men urged Capt. Barratt to secure it, when he replied—"It is not worth having; I would not give twopence for the mineral value of the whole hill," and to this day it goes by the name of the "Twopenny Hill." Such blunderings show that other qualifications are required in mining agents than to be the son of a mine captain, a person of good address, and to possess a tolerable degree of commercial knowledge. The Cornish admirable method of merging the whole commercial affairs in the office of purser dispenses with all commercial knowledge on the part of the managing agent. If a mine captain has added to a thorough mining experience in the tribute and tutwork departments a close perusal of theoretical and scientific mining all the better, but in no case can a thorough practical experience be dispensed with, and in every locality the men thus best qualified are well known, as the experts invariably stand forth in advance of less qualified and less experienced workmen, and are recog nised.—*Feb.* 7. A MINER.

MINING IN BREAGE.

SIR,—On Monday last I visited the village of Breage, where I learnt that the spirit of mining enterprise is not quite extinct. Some miners are at work in South Wheal Fortune, a copper mine of a very promising character, suspended about 30 years ago. Great Wheal Fortune, suspended three years ago on acconnt of the low price of tin, is to be resumed. The pumping and stamping engine is *in situ*, and I find that very shortly operations will be made on the immense reserves of tinstone in the branches, which are innumerable, and on the other lodes also. This is sure to pay the shareholders a good interest on their outlay. This mine is contiguous to the celebrated Wheal Vor, which yielded a profit of 272,000*l.* Central Wheal Vor adjoins Wheal Vor at the north, and has several lodes of known value, but very slightly worked below the backs by the ancients. I understand it is to be proved. Wheal Lomax, near Porthleven, is a silver-lead mine of high promise. Trewavas, which was very rich 30 years ago, is to be worked again in a new part. The worst day

for the miners of Breage are over, so I believe. I stopped at an inn in the village, where the rent is 14*l.* per annum; when the mines worked it was 30*l.* There are not many houses tenantless, although most of the mines are idle. Miners are away, and their families remain. I was glad to find that my old friend, Mr. T. Treloar, was alive and well. He is now nearly 89 years old. He has stood at the desk in Messrs. Grylls and Co.'s office ever since the year 1806. He never sat there. The mines in Wendron at work are few in number, but a revival is looked for.—*Feb.* 9. R. SYMONS.

EAST HERODSFOOT, LISKEARD.

SIR,—This week we are in possession of our agent's report confirming in every particular the statement made by the miners. The adit level was driven up to the cross-course on a lode producing 2 tons of silver-lead ore per fathom. From the cross-course the level was continued 40 fathoms south without the lode being seen, a cross-cut was then driven east, and in 6 ft. driving the lode was cut, producing rich silver-lead, so that for the whole 40 fathoms the lode is standing to commence stopiug upon, with a hill 40 fathoms high, on the top of which the lode is laid open many fathoms in advance of the drivage, where it presents most encouraging prospects for large courses of silver-lead ore. The adit can be driven at 3*l.* per fathom, this being the price at which the miners offer to take it to drive through the hill, 250 fathoms. This discovery adds another rich silver-lead mine to the Liskeard district, which is likely to bring back the activity and prosperity of its former times, when the Caradons were in their highest state of production, and through which large fortunes were made by the old class of mining captains upon the basis of— —— LEGITIMATE MINING.

AGENTS' SALARIES.

SIR,—I think "Agent" should confine his remarks to a more recent date, and not to memories of the past. No doubt the mine he alludes to is the late Emmens United, which has been idle for the last two years; and I doubt if the salaries paid at that time were much in excess of the mine I referred to, considering the amount of business transacted; the several mines working under the same direction and supervision, engaging most of their time and attention. As for horses and traps, this acquisition has long been privileged for the convenience of agents in the Caradon district (Phœnix United excepted). Doubtless some little reform could be made here also. I also find on inquiry the present staff at New Holmbush are not in receipt of higher salaries than other mines in the district; but if "Agent" will contrast the salaries paid every four weeks at South Caradon Mine with any other mines in the two counties for the work done, he will find it in excess of other agents; and I contend that as the mine no longer remains on the Dividend List, a considerable saving should be effected in this department especially.

Feb. 10. —— A SHAREHOLDER.

IMPROVED APPLIANCES FOR CORNISH MINES.

SIR,—I have read with much interest the report of the monthly meeting of the Mining Institute of Cornwall, which appeared in your valued Journal of Feb. 5. Great weight is to be attached to the suggestions, &c., consequent upon the reading of Mr. Williams' paper. Mining in foreign countries has long had my most earnest attention, and I have repeatedly heard and witnessed myself the great saving effected by the use of stone-breakers for the preliminary crushing of the ores, not only in the cost of hand-broken as compared with that broken by machine, but also the saving effected to the stamp-heads thereby.

Would Mr. Williams give to the world, through the medium of the *Mining Journal*, the data upon which he relies for the statistics showing the saving effected in using Siemens' steel instead of iron for jaws; and would it not follow that if the special stamps-head metal spoken of towards the latter end of the paper was used for making jaws for the stone-breaker they would be as cheap as steel jaws, and last as long, and thus be as economical as any jaws that could be got, as it is said is the case when used for stamp-heads? The great importance of the question of cheapening mining operations will I am confident be a sufficient apology for raising the question.

—— CRUSHING AND STAMPING.

THE CAUSES OF SUCCESS IN MODERN GOLD MINING.

SIR,—In your report of Mr. Lock's paper, "On the Causes of Success and Failure in Modern Gold Mining," I see amongst the instances given of economical working the following statements:—"Another (Australian company) treated 7453 tons in seven months, with a return of 2 dwts. 10½ grs., and paid 2101*l.* 10s. profit."

The value of the gold in this stuff is about 10s. per ton, and the total value in the 7453 tons, therefore, about 3726*l.* Deducting the profit, 2101*l.*, there remains 1624*l.*, or nearly 4s. 4d. per ton, as the total cost of breaking, raising, crushing, and extracting. Mr. Lock further goes on to say—"But the most remarkable of all is the Imperial Company of Ballarat, which has treated 2100 tons of quartz, affording only 21·99 grs. of gold per ton, with a fair margin of profit on the operation."

The value of the gold in this stuff is about 3s. 8d. per ton, and as this has left a fair margin of profit the total cost of breaking, raising, crushing, and extracting must have been less than that amount. I am much interested in gold mining and in the methods in use for the extraction of precious metals, and shall feel much obliged if Mr. Lock or any of your numerous correspondents can give further details of the position and quality of the quartz, the description of the machinery, and the method of treatment from which these most interesting and satisfactory results have been obtained. F. C. S.

Queen Victoria-street, Feb. 5.

NORTH CAROLINA GOLD MINES.

SIR,—By recent newspapers from America, it appears that the gold mines, so called, in the vicinity of Charlotte, North Carolina, and also in other localities in that State, many of which were worked 50 and 60 years ago, but without much success, are at present attracting some attention in the mining world of New York and Boston. In the latter city a company has recently purchased about 8000 acres freehold of very promising mineral lands, with gold bearing quartz and talcose slate (sometimes rich in coarse gold), for $35,000, or say 1*l.* sterling per acre. This proves conclusively that gold mining lands, copper, &c., can be bought in North Carolina in small or large tracts at very moderate and reasonable prices: 10*l.*, 15*l.*, and 20*l.* per acre will command the most desirable lands, agricultural and mineral. At these prices some good investments may be made in freeholds containing gold, and if honestly and skilfully worked might pay pretty well. Enterprising Americans, more particularly for speculation in England, may endeavour to avail themselves of the present gold fever in London to introduce some of their North Carolina Mines, expecting the long prices paid for those in India. A gold mining lease of 200 acres and for 30 years only, in the Mysore district, often sells in London for sufficient to buy the freehold of thousands and thousands of acres in North, South Carolina, and Georgia. Americans should not be misled by what has been done in India. On the contrary, always bear in mind that if they have a good gold or other mine there is always abundant capital and enterprise there, in New York and elsewhere, to work it. The time has gone by for Americans to come abroad for that purpose when they have anything that is promising. It is not flattering to have it said that American gold mining (and other) properties are brought to London when they are not considered good enough to offer in New York or Boston. S.

Hotel Chatham, Paris. ——

[For remainder of Original Correspondence see this day's Journal.]

UTILISATION OF COPPER WATER.—The mine water at Schmölnitz. Austria, contains from ⅛ to ¼ a gramme of copper to the litre of water, yet can, it is said, be made to yield up the metal, or at least a portion of it, with profit by precipitation. Owing to the presence of sulphate of peroxide of iron, which is reduced to the protoxide salt, the quantity of iron required is far above that theoretically required for the precipitation of the copper, the average amount used being 389 lbs. for every 100 lbs. of copper obtained. With the purpose of diminishing this heavy expense, Dr. Schenck has conducted a series of experiments on a small scale which give promise that an important economy will be effected. He mixes the iron with pieces of coke, which has the effect of intensifying the action of the iron, accelerating the precipitation, preventing to any considerable degree the re-oxidation of sulphate of peroxide of iron already reduced, and yielding a purer cement copper. While formerly 33 per cent. of the copper was lost in the waste waters, nearly the entire amount is now precipitated, and the experiments indicate that the consumption of iron has fallen from nearly 4 lbs. to about 3 lbs. per pound of cement copper.

REPORT FROM CORNWALL.

Feb. 10.—Some amount of unnecessary alarm as to the immediate future of the tin market was felt in the county when it was shown that there had been a larger increase of stocks than was anticipated; but the feeling rapidly declined, and—less any untoward influence of market speculations, which cannot now be very lasting—the general opinion is now pretty much in accord with the views we expressed last week. Fluctuations, of course, there may and will be; but that higher prices, and substantially higher prices too, are about to rule there seems no reason to question. Still more encouraging in their way, because it is a direction in which encouragement is sorely needed, are the recent prospects of the copper market. It is much easier now to see one's way with regard to tin than to copper; though, of course, reviving trade must affect both. If higher prices for copper do not rule, and that speedily, the effect will be very serious on some, at any rate, of the very few copper mines we have left.

Would it not be desirable that without further delay the Mining Institute should take up earnestly the question of the Employers' Liability Bill. There has been a good deal of irregular discussions, and some very promising suggestions have been made to meet the Act by the development of the "club and doctor" system, or by the formation of a new organisation upon somewhat the same line. As the matter now stands, however, we very much question whether there are a half-a-dozen mine managers in Cornwall or Devon who really do understand what the effect of the Act is, and what is its bearing upon their ordinary operations. They are not singular in this, for, as a rule, very few employers really do know what their new liabilities and responsibilities are. But mining is such a peculiar occupation, and the risks attending it are so great, that it is exceptionally necessary in its case that the working of the Act should be clearly understood, and if needful joint action taken. The desirability of the discussion of this subject, with a view to some practical outcome, by the Mining Institute is more and more apparent as time goes on, and we hope it will not be delayed much longer.

The success of the operations of the Cornish Bank during the past year are worthy of note here, because they show very clearly the improvement that has taken place in the financial position and business activities of the county. The profits of the working of the concern for the year have been in round numbers 7000*l.*, out of which 10 per cent. has been paid in dividends free of income tax; 600*l.* applied to reduce the 3000*l.* paid for goodwill; 3500*l.* carried to the reserve fund, leaving a further available balance of 1118*l.*, of which 500*l.* went to the directors and 500*l.* to Mr. Robert Tweedy. Figures like these are a very substantial endorsement of the satisfactory basis on which the bank is conducted, and of its essential soundness under the old *regime*, but for its connection with the estate of the late Sir F. M. Williams, which, by the way, has just been declared liable by the Master of the Rolls for the balance left due to depositors under the composition—4s. in 1*l.*

North Levant is the first mine of the year to re-enter the Dividend List, having this week declared its first dividend since 1872—3s. per share—with 400*l.* carried on. Others are likely to follow suit ere long.

TRADE OF THE TYNE AND WEAR.

Feb. 9.—The steam coal trade has been very flat during the past week, mainly owing to a deficiency of tonnage; a considerable number of vessels have, however, arrived during the past few days, and matters are expected to improve during the present week. The gas collieries have shipped about an average during the past week at Tyne Dock and other places. The fall in the price of coals in the London market has had a tendency to check the demand for house coals. The coke trade has been checked a little this week owing to the inability of the North-Eastern Railway Company to meet all the requirements in the shape of trucks. Contracts for gas coals are nearly completed for the year, first-class pits have got increased rates of from 3d. to 6d. per ton. These rivers are now nearly clear of ice, and the demand for manufacturing coals is improving in consequence.

The long standing dispute between the deputy overmen in part of the Durham mines and the colliery owners is about to be settled by arbitration. A meeting on this question was held in London last week, Mr. W. Armstrong and Mr. L. Wood appeared for the owners, and Mr. W. Crawford and others for the deputies. Part of the deputies in Durham have a union of their own, and the others are in the general Miners' Union, and the latter are paid at a lower rate than the former. Mr. Hinde Palmer attended as umpire, and his decision is expected to be given in a few days.

The Iron Trade has been dull and quiet during the past week. The heavy increase of stocks has had a depressing effect, although shipments have been resumed on a large scale. The stock returns, published on Thursday last, show that there was a decreased make of Cleveland iron of 5441 tons, owing to the severe weather, and the increase in stocks is 48,000 tons. The shipments foreign and coastwise in December were 78,000 tons. The effect of the increase of stocks, and the fall in Scotch iron, has caused iron to be sold in some cases as low as 39s. 6d. for No. 3, but makers are not selling at present. The manufactured iron trade, and the shipping and other Industries, which suffered by the severe weather, are gradually assuming their former condition. There is little change in the prices of finished iron, but the market has been a little flatter. The announcement by the Consett Iron Company that they will pay an interim dividend of 15s. per share, coming, as it does, upon the enlarged share capital of the company, affords proof the great prosperity of the undertaking. Messrs. Connall's stocks are now 136,507 tons, an increase of 1737 tons on the previous week. The Darlington Iron Company are asking for a subscription of 78,000*l.*, 6½ per cent. debentures.

At Middlesborough, on Tuesday, the iron market was very quiet. Shipments have been small, and some iron was offered by merchants at 38s. 6d., No. 3. The makers are much higher, but their prices are nominal Very little doing in warrants. Connall's stores have nearly 138,000 tons. Hopes are entertained that the spring shipments will reduce the stock of iron. The steel trade continues brisk, and the make of steel is expected to be largely increased shortly.

A company has been formed in Newcastle for the purpose of introducing Swan's electric light, a large number of applications and enquiries having been received from all parts of the country for information on the subject by Mr. Swan, and the company will have a large business, of that there can be no doubt, when the capital is subscribed and the company got into working order. The system is considered eminently suitable for lighting detached houses and works, as only a small engine is required and wires and lamps, the apparatus being more simple and economical than that required for gasworks, and it is thought it will prove equally applicable for lighting large towns and dwelling-houses.

Of late years the means of communication between the top and bottom of shafts, and between the ends and stations on underground engine planes in coal mines, has been vastly improved. Instead of using the ordinary "rapper," worked by means of a signal wire, at best a clumsy and uncertain means of communication, electric bells have been introduced in many instances, and in some cases the telephone has been adopted, the result being a much greater certainty of action, and thus the progress of the work is much facilitated, and increased safety is also secured, especially in shafts, where so many men have to descend and ascend daily.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—A general meeting of the members of this institute was held at Newcastle on Saturday. There was a large attendance of members. The secretary read the minutes of the last meeting and report of the proceedings of the council. Afterwards a number of gentlemen were elected as associates, and also as members. The papers read were—"Notes on Diamond Rock Boring," by Mr. J. T. Bewick; "On the Iron Ores of Antrim," by Mr. J. D. Kendall: and the following papers were open for discussion:—"On the Hematite Deposits of West Cumberland," by Mr. J. D. Kendall; "On Lightning in the Pit at Tanfield Moor Colliery."

The paper of Mr. Bewick possesses much interest, as the introduction of boring by machinery has vastly increased the resources of mining engineers for proving the strata and ascertaining precisely the nature of the minerals and their exact thickness, and this can be done with marvellous accuracy by the Diamond rock drill. Mr. Bewick referred to the fact that when the Diamond borer was first used small holes were bored, but experience had shown that the larger the diameter of the hole the more certain were the results, and for this reason and the fact that for a very deep boring a large hole was necessary for the admission of lining tubes, there had been a gradual increase in the diameter until holes had been put down 26 in. in diameter, yielding cores 23¾ in. diameter. By taking proper precautions actual samples of any strata could be obtained, and the samples were more accurate with the diamond boring than with boring by percussion. He quoted figures showing the percentages of cores obtained by means of the diamond borer, and said it was shown that with this instrument the work was more quickly accomplished, and it showed more accurately the character of the strata bored through. The deepest known hole at present had been put down by rigid rods, and the depth was 4170 ft., and the time occupied was four and three-quarter years. With the Diamond borer a hole had been put down to a depth of 2207 ft. (and it was then stopped because the object in view had been obtained) in one year and a quarter, and nearly 4000 ft. had been bored through salt rock in less than six months, and 100 per cent. of core got. A discussion followed, in which Mr. Kendal stated that in Cumberland the cost of the Diamond rock boring system, as compared with the rigid percussion system, was for a hole to the depth of 600 ft. 75 per cent. dearer, for 700 ft. 68 per cent., and for 800 ft. and over 50 per cent.; but the Diamond Boring Company gave a guarantee that the hole would be put down to the depth required, whereas under the other system, there being no guarantee that the hole would be put down to the depth required, the boring might be given up and the whole expenditure lost. Mr. Vivian, who has been connected with the Diamond boring since its commencement, gave instances showing how admirably the diamond bores worked, and stated that in Ayrshire 60, 70, and 80 per cent. of core had been got from their friable coal. The company had on an average six to eight machines constantly at work, and they expected that each machine bored to a depth of 2000 to 3000 ft. He thought Mr. Kendal's experience had shown that the cost of the Diamond boring was not much in excess of the other system. Mr. Kendal put the excess at 50 per cent., but the guarantee given by the company was equal at least to 25 per cent., and there is also the extra speed and the certainty of good samples, so that altogether value was got for the expenditure. Further notes on this subject were promised by Mr. Coulson and Mr. J. B. Simpson, and the discussion was adjourned. The discussion of the other papers before the meeting was also adjourned until the next meeting.

THE CENTRAL NORTHUMBERLAND RAILWAY.—An important meeting was held at Alnwick, on Friday last, of land owners, land agents, and others interested in this project. There are, indeed, two projects, although a large majority present at the meeting fully approved of both—1. A line from Alnwick to Kelso or Cornhill; 2, a through line from the Tyne to the Tweed. Resolutions were passed approving of both these schemes, and a committee was appointed, who will wait on the directors of the North-Eastern Railway Company, and endeavour to induce them to adopt and carry out one or both these schemes. Every facility will be given by the landowners by selling their land at a cheap rate. The district is chiefly agricultural, but the land is very valuable.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Feb. 10.—There has been some interruption to work in the lead mining districts of Derbyshire owing to the snow storms and accumulation of water, as is usually the case under such circumstances. The latter part of the week, however, was more favourable, and operations have nearly got into their old groove again. It is a fact that in few of our mining districts has there been less progress made in lead mining than in Derbyshire, and this may be attributed to the peculiarity of the mining laws, which allows of working miners becoming mine owners. The iron trade has undergone very little change of late, there being an average out-put: but sales do not appear to be quite so brisk as they have been, whilst prices have slightly declined. In rolled iron, business for some time past has only been of a moderate character, but some of the foundries are rather better off than they have been. At the steelworks there has been a heavy out-put of rails, for which the demand continues active. The house coal trade continues good, and transactions with the Metropolishave been rather heavy, where prices have been higher than would otherwise have been the case were it not for the strike of the miners in Lancashire. From Clay Cross alone something like 6000 tons a week has been forwarded to the Metropolis, and a large tonnage has also been sent from Eckington, Blackwell, Grassmoor, Langley Mill, and Tibshelf. Steam coal has not materially improved of late, more especially as regards the exports for shipment. Gas coal has gone off very well of late, but principally in the carrying out of contracts made some time since. The wages question has been rather quiet at the collieries in Derbyshire, and there are only a few places where a demand has been made for an advance, but should it be conceded in the South Yorkshire district no doubt the miners in North Derbyshire will seek for a similar concession.

In Sheffield trade is in a satisfactory state, most branches being well employed. The make of pig in the locality has been kept up to the ordinary average, and sales have been tolerably good for both mill and foundry purposes. The consumption of hematite is still heavy, owing to the activity in particular of the Bessemer works. Some good orders have been booked for the Admiralty for steel-faced or composite plates at the Atlas Works, on the patent of the Chairman (Mr. Ellis), which have stood the tests at Portsmouth most satisfactorily. A steady trade has also been done in ship and boiler plates, as well as in sheets, hoops, and telegraphic and other wire. In Bessemer rails a good business continues to be done for both home and other lines, and there is also a steady demand for carriage wheels, tyres, axles, and, indeed, for every description of railway material. Makers of edge tools have been working steadily, but file makers are scarcely so busy as they have been. For the best qualities of cutlery some good orders have been received from the West Indies, America, and our own colonies. In consequence of the activity in this branch of trade, table blade grinders have asked for an advance of wages of from 2s. to 4s. per week. At the works outside the town business has kept up well, and the production of manufactured iron and steel has increased more than otherwise. The collieries have been working well, there being brisk enquiries for house and engine coal.

In South Yorkshire the coal trade is in anything but a satisfactory state, and a large number of miners are now out on strike in consequence of the owners not having conceded the advance of wages asked for; and next week, in all probablity, will see the number greatly increased. Still the demand for house coal is brisk, and the strike in Lancashire has led to active enquiries for engine fuel, prices of which, as might be expected, have gone up, and this has led the miners to ask for increased wages, although they must know that the present state of things is exceptional and not likely to last much longer. At the Hoyland Silkstone Colliery the men having been working at an advance of 7½ per cent., but will only do so up to next week, when they will leave unless the other 2½ per cent. is granted. A movement is on foot to have a sliding scale adopted in the district, and a meeting of colliery owners and representatives of the working

miners to take the matter into consideration is to be held on Friday at Sheffield.

WAKEFIELD ROLLING-STOCK COMPANY.—At the half-yearly meeting, Mr. W. Grace, in moving the adoption of the report (in which the directors recommend the payment of a dividend of 5 per cent. for the past half-year), said that although trade had revived in certain branches, the demand for wagons had not yet increased in like proportion. True, more business might have been done by the company, but the directors had exercised a wise discretion in holding their hands rather than enter into engagements which might have had unfortunate results. Instead of employing their money in that way, they had repaid a number of debentures, and this brought the company into narrower limits. Alderman Watson was unanimously re-elected a director, the general feeling appearing to be that that gentleman was the life and soul of the company.

YORKSHIRE BOILER INSURANCE AND STEAM USERS' COMPANY.—At the annual meeting (Mr. George Hodgson, the chairman of the directors, presiding), Mr. John Waugh, the engineer, presented a report, from which it appeared that during the year the company had thoroughly examined 98 per cent. of the boilers entrusted to their care, a result highly satisfactory when the appointment for "thorough" inspections is considered. The report of the directors stated that the profits during the year enabled them to propose the usual dividend of 7½ per cent. on the paid-up capital, and also the addition of 137*l.* 13s. 5d. to the reserve fund, carrying forward to next year's account the sum of 600*l.* to meet working expenses and claims that may arise on policies unexpired at December. The Chairman moved the adoption of the report, which was seconded by Mr. T. Ormerod, of Brighouse, and carried.—A vote of thanks was passed to the directors for their services, on the motion of Mr. Gill, seconded by Mr. R. Revell. The retiring directors, Messrs. B. Sheard, W. D. Shaw, and J. M. Tankard, were re-elected. Mr. J. A. Binns, accountant, was re-appointed auditor.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Feb. 10.—So confident are colliery proprietors in their capability to maintain the advance in coal declared last week by the Earl of Dudley, and which has now become general, that on 'Change this afternoon in Birmingham certain of them were refusing to book contracts three months forward at the new prices. The forge coal-owners from some of the localities announced that the demand at the pits is greater than they can supply. Such people quoted 7s. 6d. for lumps, and 3s. per ton for fine engine slack got from the thin seams. It was stated that the Cannock Chase coalowners are experiencing not a little difficulty in the matter of supplying the demand from Lancashire which ensues upon the strike of colliers there in that Union. Notices are being received at some of the collieries stating that if railway wagons for that part of the kingdom continue to be filled the men will be called out of the pits. These notices in some instances are having the desired effect of stopping supplies.

The pig-iron makers this afternoon asked an advance of 2s. 6d. per ton, but in very few cases was the rise obtained. In instances were urgent supplies are needed for the purposes of "mixtures" small orders were given at the higher prices. Some of the finished iron makers, particularly the sheet and plate rollers, sought an advance of 5s. The former were not wholly unsuccessful, but the latter did little or no business at the rise. Merchant common bars were 6*l.* 2s. 6d. to 6*l.* 5s., and medium bars 6*l.* 10s. to 7*l.*

The long-continued depression in the South Staffordshire iron trade has resulted in another heavy failure here. A petition in liquidation has been filed on behalf of Mr. James McEwen, of the Parkhead Furnaces, Netherton, near Dudley. The liabilities are set down at 20,000*l.* Sympathy is expressed with Mr. McEwen, and as he has collieries as well as furnaces, the assets, it is thought, will be considerable. Expensive litigation during the past few years has considerably augmented his liabilities.

An interim dividend for the half-year ending Dec. 31 last has just been declared by the directors of the Sandwell Park Colliery Company (Limited). It is at the rate of 5 per cent. per annum.

The directors of the Midland Railway Carriage and Wagon Company have declared an interim dividend for the half-year ending Dec. 31 at the rate of 5 per cent. per annum on the ordinary and 5 per cent. per annum on the preference shares, free of income tax.

The sinking operations at the Cannock and Huntington Colliery are going on effectively. In No. 2 pit the column of tubbing of about 430 ft. has been cleared of water, and the iron bottom taken out. The arrangements for keeping back the water have answered, and the bottom was found quite dry. The first workable seam of coal—5 ft. 4½ in. thick—lies only about 5 ft. from the bottom of the tubbing, and will probably be reached in a few days. The next workable seam—8 ft. thick—is at a depth of 540 ft. Sinking of tubbing has also began on No. 1 pit.

The North Staffordshire Iron and Coalmasters' Association has just been held at Hanley to consider the notice for an advance in wages tendered by the North Staffordshire colliers on the ground of the exceptional demand from Lancashire. It was resolved that the notice be not accepted, being quite irregular, and not given by the workmen themselves to their employers; that the exceptional demand from Lancashire was quite inadequate to enable the coal-masters to pay an advance in wages; that no general advance in prices either of coal or iron had been obtained, and that, therefore, an advance of wages at the present time was not possible; but that as soon as ever improved prices could be obtained, so as to enable wages to be advanced, the employers would be ready and willing to announce an advance.

MINE MANAGERS' CERTIFICATES.—The following candidates were successful at the recent mine managers' examination, held at Wolverhampton:—Frederic Griffiths, Pesnett, near Dudley; William Lane, Forest Colliery, Bloxwich; Charles Fisher, Walsall; T. H. Bailey, Perry Barr; David Hughes, Bagiell, near Mold; and Isaac Meachem, jun., Old Hill.

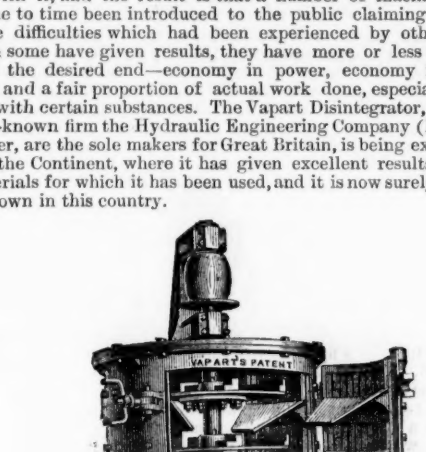
REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Feb. 9.—The Corris slate district, to which we drew attention last week, still maintains its brisk and active appearance, and it is quite invigorating to see the men who hitherto have been only partially employed, if employed at all, walking about with a business-like, wide-awake air, so different from the slouching carelessness characteristic of men out of work. It is rumoured that the Potteries, Shrewsbury, and North Wales Railway, which for many months has stopped working, and which is now in a rusty and weedy condition, is about to enter into another stage of existence, and that the arrangements for its sale, if not already completed, are verging on to completion. Little is heard now of the Liverpool water scheme, although the time of the year for the commencement of such works is drawing near. The Vernieu Valley has during this week been visited with a flood, surpassing all its recent achievements in that line. At Llanymynech the water covers the hedges, and the country for miles looks like an arm of the sea. There is sufficient water lying on the land here to fill half a dozen reservoirs as big even as the proposed Liverpool one at Llanwddyn. Notice has been given by the workmen employed throughout the North Wales collieries to their different employers, in which they ask them for weekly payments instead of the usual system of payment at the various collieries, and they also ask their employers to consider the matter, and to give their decision by Saturday, Feb. 12.

On Saturday last, Feb. 5, the colliers in the Chirk district brought their tools out of the pits for the purpose of going on strike, as the 14 days' notice which they had given for an advance in wages of 25 per cent. had expired without the terms being conceded by the employers. The men had offered to meet the masters by agreeing to go on at 15 per cent., but as this proposal also was not agreed to the men turned out on strike on Monday, numbering between 700 and 800. The men at the Black Park Colliery resumed work on Tuesday, having accepted an advance of 7½ per cent., and it is now expected that the men at the other collieries will shortly give in. As the North Wales collieries are generally connected together by the sliding scale, and the auditors are now busy with the masters' books, it is expected that satisfactory terms will be shortly arrived at, and a rise, although not to the extent demanded, be shortly given. All the North Wales collieries, where the men are not on strike, are working full time now, but during the late frost about 2000 men in the Ruabon district alone were out of work.

THE VAPART DISINTEGRATOR.

The pulverising of materials is a subject which is interesting to almost all branches of trade, but specially so to the mining community. The question of pulverising, although apparently simple to solve, has caused much study among engineers immediately connected with it, and the result is that a number of machines have from time to time been introduced to the public claiming to overcome the difficulties which had been experienced by others; but, although some have given results, they have more or less failed in securing the desired end—economy in power, economy in maintenance, and a fair proportion of actual work done, especially when dealing with certain substances. The Vapart Disintegrator, of which the well-known firm the Hydraulic Engineering Company (Limited), of Chester, are the sole makers for Great Britain, is being extensively used on the Continent, where it has given excellent results with all the materials for which it has been used, and it is now surely making itself known in this country.



The illustration which we give needs little explanation. The machine consists of a cast-iron cylindrical chamber, which may be fixed in any convenient place. The chamber has two doors, opposite to each other, which are hermetically closed when it is at work, and may be easily opened to examine the interior, which contains a vertical shaft, on which are keyed three (or more) platforms, carrying vanes fixed radially; to the inside of the casing are bolted serrated segments of chilled cast-iron on a level with the platform, and hoppers or pieces so contructed as to form (when closed) a sort of funnel immediately underneath the platform. The shaft to which the platforms are fixed is made to revolve at a high speed, and the material, which is fed in at the top, falls on the centre of the first platform, and being guided by the vanes is violently projected against the first series of serrated segments, and being broken falls by its own weight down the hopper on to the centre of the second platform, whence it is projected against the second series of segments. After undergoing the same operation on the third platform it falls to the floor of the cylindrical casing, from which it is swept into the delivery opening at the bottom.

It will thus be seen that the disintegrator is effected by a methodical and economical application of centrifugal force and gravity, the chief feature being that the moving part of the machine, not having to do the actual work of breaking the material, offers comparatively little resistance to the driving power, and the parts which receive the shock, and against which the material is broken, being massive fixed segments of cast-iron, are stationary. These being also almost the only wearing parts can be easily renewed when necessary at small cost. Over 150 of these machines have already been supplied to different parts of the world, and are reported to be giving general satisfaction. Messrs. Ohlendorff, of North Woolwich, have two of them constantly pulverising guano, bones, phosphates, &c.; and Messrs. C. Tennant and Co., of St. Rollox Works, Glasgow, have also two. The Vieille Montagne Company have as many as ten, some of which have been constantly at work for six years pulverising zinc ores. Messrs. Paul Christofre and Company, of Paris, have had machines at work for years reducing nickel ore, and others are at work at Messrs. Dumas Fremy, of Paris, constantly reducing emery, flint, &c.; at Messrs. Leon Petein, of Paris, for gold and silver refuse; at Messrs. Huet and Geyler, of Paris, for silver-lead ore; at Messrs. Rabasse Faivre, of Ancy le Fr , France, for barytes; at Messrs. Kuffré and Co., of Peru, for auriferous quartz; at some of the lead mines in Sardinia, Uruguay, Spain, &c.; and many are employed at chemical works for various products, including manure, &c.

The following data, extracted from a paper read at a meeting of one of the scientific societies in France, by Mr. Ed. Cordies, Engineer of the Glassworks of St. Gobain, Chauny et Cirey, may be interesting to many readers, as it gives the actual practical results obtained from the Vapart Distintegrator in ordinary every-day work at the above works, with the cost per ton of material reduced.

EXTRACT.

The following particulars show the actual cost (per ton) of pulverised pyrites with a No. 2 Vapart's Patent Disintegrator, running at 520 revolutions per minute, and pulverising 10 tons per hour at the glassworks of St. Gobain, Chauny and Cirey:—

	Centimes.
Breaking the rock pyrites.....Per ton	400
Wheeling the broken material to disintegrator.....	100
Two men to feed the machine	051
Two men to clear away pulverised material	051
Coal, 450 kil., at 17 fr. per cent.	079
Engineman, oil, grease, &c.	049
Repairs	100
Total	830

Which is equal to about 8½d. per ton, including the cost of reducing the large blocks to fragments of about 2 in. in diameter before introducing them into the disintegrator.

At the pyrites mines of the same company, at Sourcieux, a No. 2 machine, running at 450 revolutions per minute, and driven by an 18-horse power non-condensing engine, pulverised in constant regular work 14 to 15 tons of pyrites per hour; but latterly extra work has been put on the engine, it now having to drive other machinery as well as the disintegrator, and the production of pulverised pyrites has on this account fallen to 10 tons per hour. The detail of cost for this machine, taken on an average for 1879, is:—

	Centimes.
Wheeling, breaking, and feeding disintegrator...Per ton	150
Loading the pulverised material for dispatch	037
Engineman	047
Drivers	016
Coal	070
Oil, grease, &c.	020
Repairs of discs	018
„ vanes	086
„ serrated segments	022
„ hoppers	006
Sundry bolts	010
Labourer, changing parts	060
Repairs to engine and tools, &c.	170
Total	712

Or (say) 7d. per ton.

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Mr. S. J. DAVEY, mine share dealer, Redruth (Feb. 10), writes:—On the whole our market has been quiet, although for a short time there was a good demand for the few favourite tin mines. Prices declined, advanced, and again declined. To-day there is but little doing, owing partly to the settling. New Cook's Kitchen shares advanced to 7½, 8, from 6¾ to 6¾, on a good improvement for copper. The following are to-day's prices:—Blue Hills, 2½ to 3; Carn Brea, 113 to 115; Cook's Kitchen, 11 to 11½; Dolcoath, 56½ to 56¾; East Pool, 33¾ to 34; Killifreth, ⅛ to ⅜; Mellanear, 4¾ to 5; New Cook's Kitchen, 7½ to 6; North Busy, 1¾ to 2; Pendarves United, 9 to 10; Penhalls, 1¾ to 2; Pedn-an-drea, 2*l.* 8s. to 2*l.* 10s.; South Condurrow, 10½ to 10¾; South Crofty, 10 to 10½; South Frances, 10½ to 11; Tincroft, 19 to 19½; West Basset, 12¾ to 13¼; West Frances, 11 to 11½; West Kitty, 2 to 2½; West Peevor, 15 to 15½; West Poldise, 3½ to 4; West Tolgus, 45 to 50; West Seton, 18 to 20; Wheal Agar, 5 to 5½; Wheal Basset, 4¼ to 4¾; Wheal Comford, 4 to 4½; Wheal Grenville, 10¼ to 10¾; Wheal Peevor, 20 to 22½; Wheal Kitty (St. Agnes), 3¾ to 4¼; Wheal Prussia, 1½ to 1¾; Wheal Uny, 3¾ to 4¼.

— Mr. J. H. REYNOLDS, stock and share broker, Redruth (Feb. 10), writes:—Dnring the week a fair business has been done in Carn Brea, Dolcoath, and East Pool shares, but others are rather neglected, except New Cook's Kitchen shares, which are in request at rather higher prices. The following are closing quotations:—Blue Hills, 2¾ to 3; Carn Brea, 114 to 115; Cook's Kitchen, 10¾ to 11¼; Dolcoath, 56½ to 56¾; East Caradon, 2 to 2¼; East Pool, 33¾ to 34; Gunnislake (Clitters), 4¼ to 5; Levant, 4 to 6; Marke Valley, 1½ to 1¾; Mellanear, 5 to 5½; New Cook's Kitchen, 7¼ to 7½; North Busy, 1¾ to 2; North Herodsfoot, 10s. to 12s. 6d.; Pedn-an-drea, 47s. to 49s.; Pendarves United, 9 to 10; Phœnix, 2¼ to 2½; Penhalls, 1¾ to 2; South Caradon, 65 to 70; South Condurrow, 10¼ to 10¾; South Crofty, 10 to 10½; South Frances, 10¼ to 10¾; Tincroft 19¼ to 19¾; Trugo, 1¼ to 1¾; West Basset, 13½ to 14; West Frances, 11 to 11½; West Peevor, 16 to 16½; West Poldice, 3½ to 4; West Seton, 19½ to 20½; West Tolgus, 50 to 52½; Wheal Agar, 5 to 5½; Wheal Basset, 4¾ to 5; Wheal Boys, 2¼ to 2½; Wheal Comford, 4 to 4¼; Wheal Grenville, 10¼ to 10½; Wheal Jane, 12s. 6d. to 15s.; Wheal Jewell, 8s. to 10s.; Wheal Kitty, 3½ to 4; Wheal Peevor, 23 to 24; Wheal Prussia, 1½ to 1¾; Wheal Uny, 4 to 4¼. Cornish Bank shares 20*l.*

— Mr. JOHN CARTER, mine sharedealer, Camborne (Feb. 10), writes:—The share market has been quiet during the week with prices generally a little easier. Carn Brea shares are firmer, also East Pool. New Cook's Kitchen shares have improved to 7½ buyers, on a good improvement for copper in the bottom level west, in which the lode is valued at 5 tons per fathom. Wheal Peevor shares have declined. Closing prices herewith:—Blue Hills, 2¾ to 3; Carn Brea, 114 to 116; Cook's Kitchen, 10½ to 11; Dolcoath, 56 to 57; East Caradon, 1¾ to 2; East Pool, 33½ to 34; Mellanear, 5 to 5¼; New Cook's Kitchen, 7½ to 7¾; North Busy, 1¾ to 1⅞; Penhalls, 1⅞ to 2; Pedn-an-drea, 49s. to 50s.; South Caradon, 60 to 65; South Condurrow, 10¼ to 10½; South Crofty, 10 to 10½; South Frances, 11 to 11¼; Tincroft, 19 to 19½; West Basset, 13¼ to 13½; West Frances, 11 to 11½; West Peevor, 15½ to 16; West Poldice, 3⅜ to 3⅝; West Tolgus, 47½ to 52½; West Seton, 19 to 20; Wheal Agar, 5¾ to 5½; Wheal Basset, 4½ to 4¾; Wheal Grenville, 10½ to 10¾; Wheal Jane, 12s. 6d. to 15s.; Wheal Peevor, 21 to 23; Wheal Kitty (St. Agnes), 3½ to 4; Wheal Prussia, 1½ to 1¾; Wheal Uny, 4 to 4¼.

— Mr. M. W. BAWDEN, Liskeard (Feb. 10), writes:—The mining market remains quiet, and quotations are mostly nominal, although holders of stock show but little deposition to sell, feeling confident of better prices in prospective. Subjoined are the closing quotations:—Bedford United, 1⅞ to 2; Carn Brea, 115 to 116; Gunnislake (Clitters), 4½ to 4¾; Cook's Kitchen, 11 to 11⅛; Dolcoath, 56½ to 57; Drake Walls, 1½ to 1¾; Devon Consols, 13½ to 14; Devon United, 1¾ to 2; East Caradon, 2 to 2¼; East Crebor, ⅝ to ¾; East Herodsfoot, ¾ to 1; East Pool, 33½ to 34; Gawton United, 1¾ to 1⅞; Glasgow Caradon, 1 to 1⅛; Herodsfoot, ⅝ to ¾; Hingston Down, 1¼ to 1⅜; Marke Valley, 1½ to 1⅝; New West Caradon, ⅝ to ¾; North Herodsfoot, ½ to ⅝; Old Gunnislake, ¾ to ⅞; Phœnix United, 2¼ to 2½; Prince of Wales, ¾ to ⅞; South Caradon, 60 to 62½; South Condurrow, 10 to 10½; South Crebor, 1 to 1⅛; South Crofty, 10 to 10½; South Devon United, 1⅜ to 1½; South Frances, 11¼ to 11¾; Tincroft, 19½ to 20; West Basset, 13 to 13½; West Caradon, 1¾ to 1⅞; West Chiverton, ⅝ to ¾; West Crebor, ⅜ to ½; West Frances, 10½ to 11; West Mary Ann, 1 to 1¼; West Phœnix, 1⅜ to 1⅝; West Seton, 19½ to 20; West Tolgus, 49 to 50; Wheal Agar, 5½ to 5¾; Wheal Basset, 4½ to 4¾; Wheal Crebor, 3½ to 4; Wheal Grenville, 10 to 10½; Wheal Hony and Trelawny, 2½ to 2¾; Wheal Kitty, 3¾ to 4; Wheal Jane, ⅝ to ¾; Wheal Peevor, 23 to 23½; Wheal Uny, 4¼ to 4½.

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers, Queen's Chambers, Market-street (Feb. 10), write:—The business during the past week has been on a very restricted scale, as, apart from the fact of the settlement occurring, with the usual slackening of fresh operations during its completion, a dull tone has pervaded the markets throughout, the number of dealings reported being far below the average for some time past. Notwithstanding that so little has been done, figures obtained on dealings do not show many instances of depreciated values, and where lower rates have to be noted the decrease is not of any great moment. Some few speculative stocks have moved backwards and forwards, but no important feature is to be found on comparison with prices ruling a week ago. In the other cases the alterations show a distinct balance of adverse movement, in some instances having proved to be of a severe character. In one or two cases in which recently a brisk rise has been noted ease is apparent, consequent, probably, on the check business development has received from the exceptionally severe weather, and the numerous trade disputes and other disturbing elements. These latter causes are to be deplored, as it appears to be a generally accepted fact that business had assumed a sounder aspect, and had altogether a much brighter prospect than had been the case for a long time past. That a fresh step forward may be expected, and will commence immediately a more settled feeling again takes possession of the market, is evinced by the unwillingness of sellers to entertain much reduced figures, and a demand not confined chiefly to speculators. The markets are watched pretty closely, and the turn is only a question of time.

BANKS.—The business in banks is very meagre, and is confined to dealings in Manchester and Liverpool District and Manchester and Salford. District quote lower on transactions (as well as in quotations), and Manchester and Salford, though having been done at reduced figures during the early part of the week, have latterly fetched full rates again. The quotations are not numerous, the only decline of consequence being ⅜ on Manchester and Liverpool District. National Provincial (new) have been put down ⅛, but since have rallied, and to-day are marked same as a week ago. Advances are marked, of ¾ in Bank of Liverpool, Manchester, and Salford; ⅛, and reckoning dividend 1, on Parr's. The scheme for reconstruction of the Southport and West Lancashire Bank has been under consideration again in shareholders' meeting, at which it was announced that 17,000 odd of the preference shares had been applied for, but the committee say it will require 25,000 to be taken up, and a call of 1*l.* per share to be made on the original shareholders, to commence again with chance of success. Considerable support is promised from the depositors to the newly-constructed bank if carried on.

INSURANCE.—Business very small, and without feature. Commercial Union are ½ higher. Thames and Mersey have been a trifle higher during the week, but now stand again same as last week. Lower, Imperial Marine, ½; British and Foreign Marine, ¼; Maritime, ¼; and a few others fractionally.

COAL, IRON, &C., AND MINING.—Dealings very few, but prices realised not much different. Quotations nearly all, where changed, are for the worse, only two being marked higher—Consett Iron, 1; and Tharsis Sulphur and Copper, ¼; whilst the cases of decline are numerous, and in some cases sharp. Chatterley Iron are 1¾; Nant-y-Glo and Blaina, 1½; Sheepbridge Coal and Iron, 1¼; Teesside, ½; John Browns, ½; and United States Rolling Stock, ⅜ lower, besides others, ¼ or ⅛ down.

COTTON SPINNING AND MANUFACTURING keep quiet, with but few transactions passing, prices, however, keeping without change of moment. TELEGRAPHS have not shown much activity, and quotations only show changes in Globe Preference and Western and Brazilian Telegraph, both of which are ½ better. CANALS are neglected and unchanged. In CORPORATION STOCK the only movement is a rise of ½ in Bradford stock. In MISCELLANEOUS little doing. Manchester Carriage Company have declined ½, and West India and Pacific Steam ½. Crystal Palace stocks, too, show sharp decline.

RAILWAYS.—As compared with last week prices show no material change. Considering the small amount of business doing the fluctuations in a few stocks have been numerous—for instance, have been as low as 90 and as high as 93. Brighton, A, have moved between 135⅝ and 139⅞. Caledonians, 109 and 110⅝. These movements have helped to make an otherwise very dull market rather more lively. The Great Northern dividend of 6¼ per cent. per annum has had no appreciable effect on their deferred stock. The feature of the week is the announcement of the Grand Trunk of Canada dividends—5 per cent. per annum on the First Preference, 7 per cent. on the Second Preference—consequent on a 1 per cent. addition to the second half-year completing full payment for 1880—and 1 per cent on the Third Preference, and on this the Second Preference show the greatest change, being maked 96¾ to 97. Great Western of Canadas good and steady. American prices have come rather irregularly from the other side, causing a tendency to ease accounts, and the large speculation lately prevalent in this class has declined considerably, hence the weakness of values. Ohio First Mortgage are the only stock pointing a material rally on the week, with a fractional rise on the Second Mortgage. Cairo and Vincennes are still looked forward to as a promising investment for a quick turn.

HULL.—Mr. W. FOWLER SUTTON, stock and share broker, St. Mary's Chambers (Feb. 10), writes:—The healthier state of the account the settlement of which concludes to-day induced a more buoyant feeling in the railway market early in the week, but yesterday's traffics not being up to expectation and the paucity of business have exercised a depressing effect, which is reflected in to-day's current prices. The flatness in the Southern stocks arises, however, principally from fears of a war of rates at various competing points of the companies' systems, the South-Eastern being the apparent transgressor. Trunks and Canadas firm. Nothing further has elapsed respecting the amalgamation, but from the influential status of its promoters there would seem to be a better chance of its consummation. Local stocks firm. Hull Banks, 110 to 12 ex div.; Yorkshire Banks, 25 to 26; London and Yorkshire Banks, 32s. to 32s. 6d.; Earl's Shipbuilding, 20½; Hull Trams, 9½ to 10.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (Feb. 10) writes:—During the past week business has remained inactive owing to the approach of the fortnightly settlement and declining metal markets, but some slight recovery has been established for the new account Feb. 25, owing to the rates of continuation proving lighter at the settlement, as well as expectations of a more satisfactory spring trade, and the issue of favourable Board of Trade Returns for the month of January.

In shares of coal, iron, and steel companies the movements for the week comprise advances of 3s. 9d. per share on Monkland (pref.), 1s. each on Clyde Coal and Marbella, and 6d. on Benhars; but Bolckow, Vaughan (A) are reduced 5s. per share, Ebbw Vale 2s. 6d., Glasgow Port Washington and Monkland each 2s., and Steel Company of Scotland 1s. 3d. In the Scotch pig-iron market the price of warrants have declined from 51s. 11d. to 50s. 3d., owing to the increased production and the quieter accounts from America, although it is expected as the season progresses and navigation opens that a recovery may be made. The reports of the shipbuilding trade are still good, and some builders are now so full of work as to be unable to tender for more. Benhar shares have been steady, from 11s. to 13s. The Court have decided that the liquidators be authorised to continue existing contracts, and otherwise carry on the business of the company, although only for the purpose of the most advantageous and speedy winding-up of the company's affairs, reserving for further consideration whether the liquidators should be empowered to make new contracts for supply of coal, &c. The meeting of the Llynvi and Tondu is to be on Feb. 25. Chapel House (pref.) shares unaltered. Bagworth Colliery are at 67s. Bilson and Crump, 60s.; Bolckow, Vaughan, 29 to 29¼; Cardiff and Swansea Colliery, 35s.; Chapel House Colliery, 20s. to 30s.; Chillington Iron, 82s. 6d. to 87s. 6d.; Clyde Coal, 90s. to 93s.; Ebbw Vale, 11¾ to 12; Henry Briggs, A, 10 to 12; John Bagnell and Sons, 17s. 6d.; Lofthouse Colliery, 65s.; Marbella Iron, 83s. to 85s.; Monkland Iron and Coal, 47s. to 49s.; ditto (pref.), 5 to 5¼; Mwyndy Iron, 45s.; Newmarket Colliery (pref.), 5; Nerbudda Coal and Iron, 10s. to 15s.; New Sharlston, 90s. to 100s.; Oakham Colliery (pref.), 5s.; Omoa and Cleland, 33s. to 34s.; Pelsall, 12½; Steel Company of Scotland, 11¼ to 11¾; Thorp's Gawber Hall, 20s.; West Glendore Colliery, 50s.; and Wigan and Whiston Coal, 75.

In shares of foreign copper and lead companies a considerable business has been done. The dealings have been principally in Tharsis, which have been steady from 57⅞ to 58⅞. Canadians are at 45s. to 47s. 6d.; Huntingtons, 60s. to 63s.; Hungarian, 20s.; Hornichos, 10¼. Panulcillo touched 6l. 16s. 3d.; now about 6½.; Rio Tinto, 23 to 24; and Yorke Peninsula (preference), 17s. 6d. to 20s.

In shares of home mines prices are steady, without particular movement to notice, owing to the quiet state of the metal markets. Glasgow Caradons remain at 21s. to 21s. 6d. The Killifreth meeting is to be on Feb. 11, and it is still hoped some improvement may be met with in the new part of the mine. Bedford United are at 32s. 6d. to 37s. 6d.; Blaen Caelan 22s. 6d.; Bwlch United 20s. to 30s.; Cambrian, 16s.; Devon Copper and Blende, 2s. 3d.; East Buller, 20s.; East Caradon, 40s.; East Chiverton, 20s. to 30s.; East Long Rake, 25s.; East Van, 30s. to 40s.; Fortescue (Stannagwyn), 40s.; Gunnislake (Clitters), 5 to 5½; Indian Queen, 35s. to 45s.; Mount Carbis, 44s.; North Busy, 40s.; North Malton, 12s. 6d.; North Penstruthal, 40s.; New Kitty, 30s. to 40s.; Pant-y-Mwyn, 15s. to 25s.; Penandra, 50s.; St. Just United, 50s. to 70s.; South D'Eresby, 13s. 9d.; South Devon United, 25s. to 30s.; Tamar, 17s. 6d. to 22s. 6d.; Tretoil, 21s.; West Chiverton, 5s. to 10s.; West Crebor, 7s. 6d. to 10s.; West Holway, 26s. 3d.; West Kitty, 40s. to 50s.; West Polgooth, 40s.; Wicklow Copper, 4s. 6d.; Wheal Jane, 10s. to 15s.; Wheal Jewell, 10s. 6d.; and Wheal Owles, 7 to 8.

In shares of gold and silver mines there has been a fair amount of business done. Richmonds are now quoted ex div. Flavillas unaltered. It is understood steps are being taken for the reconstruction of the Cedar Creek Company. Almadas are at 8s. 9d. to 10s.; Chontales, 4s to 6s.; Callao Bis, 27s. 6d. to 32s. 6d.; Devala Provident, 1s. 3d. to 3s. 9d.; English-Australian, 22s. 6d. to 27s. 6d.; Gold Coast, 4s. to 6s.; Great Southern Mysore Gold, 20s.; Indian Mammoth, 5s. dis. to par; Kapanga, 10s. to 15s.; Nava de Jadraque, 15s.; New Gold Run, 2s. 6d. to 5s.; Pestarena United, 9s. 6d.; Santa Barbara, 27s. 6d.; South Indian, 40s. to 45s..; Tecoma, 5s. to 10s.; and Victoria (London), 7s. 6d. to 10s.

In shares of oil companies Broxburn have advanced 5s. per share, and Uphall 1s. 3d.; but Young's Paraffin are reduced 2s. 6d. Young's Paraffin declined to 12s. 12s. 6d., but have recovered to 12l 16s. 3d.

In miscellaneous companies business has been quiet. Phospho-Guano are now dealt in ex div. Gaux Manure are at 21s.; Langdale's Chemical, 57s. 6d.; Lawes' Chemical, 5¾; Moel Tryfan Crown Slate, 20; Newcastle Chemical, 55s. to 56s.; and Scottish Wagon (new), 58s.

GLASGOW CARADON CONSOLIDATED COPPER.—The meeting of this company was held on Feb. 7, and the report submitted for 1880 showed the ore sold (1834 tons) realised 7138*l.*, and the result was a loss of 662*l.*, against a loss of 109*l.* in previous year. The Chairman said the disappointing falling off in the 90 and 102 levels had affected the output, but they hoped the lode had gone off on a south underlay, which similarly took place at the 65 some years ago. The indications for working were favourable, and they expected the mine again to become very productive. The reserves meantime are considerable. The shaft is being sunk to the 114, and everything done as speedily as possible to realise the favourable results above anticipated.

On Contango day (Monday) the following were the rates of continuation—Contangos: 2d., 1½d., 2d., 3d., 2½d. on Benhar Coal; 4½d. on Callao Bis; 3d. on Canadian Copper; 4d., 1½d. on Clyde Coal; 1d., 1½d. on Caradon; 5d., 7d. on Glasgow Port Washington; 5d. on Huntington; 5d. on Marbella; 3d., 2½d., 2d., even on Monkland Iron; 4½d., 3d. on Pref.; 5d. on Omoa; 1s., 10½d., 7½d., 4½d. on Panulcillo; 3d. on Parys Copper; 6d. on Rio Tinto; 6d. on South Indian Gold; 8d. on Steel Company; 8d. on New; 1s. 6d., 1s. 9d., 2s. on Tharsis; 1s. 6d. on New; 5d. on West Kitty; 9d. on Wheal Crebor; 1s on Wheal Grenville; 1s. on Broxburn; 1s. on Uphall Oil; even on Young's Paraffin; 1s. 3d. on India Rubber.

On comparing the making-up prices fixed to-day for the following shares with those current at last settlement for the same shares, the variations thus shown to have taken place during the account are as follows:—Tharsis have advanced 2*l.* 10s. per share; Rio Tinto, 2*l.* 2s. 6d.; Tharsis (new), 1*l.* 5s.; Broxburn Oil, 15s.; Richmond, 10s.; Panulcillo, 6s. 3d.; Clyde Coal, 1s. 6d.; Uphall, 1s. 3d.; Oakbank, 6d. On the other hand, Monkland (pref.) are reduced 13s. 9d. per share; Young's Paraffin, 5s.; Glasgow, Caradon, and Monkland Coal and Iron, 4s. each; Glasgow Port Washington, 3s.; Steel Company of Scotland, 2s. 6d.; Canadian Copper, Huntington Copper, and Omoa and Cleland, each 2s.; and Marbella Iron Ore, 1s. The remainder are unaltered:—Benhar Coal, Glasgow Caradon (new), and Steel Company of Scotland (new).

TELEGRAM (Friday, 1 p.m.).—No particular change in prices, but market easier on iron warrants touching 50s. Colliery and iron shares quiet, except Nant-y-Glo and Blaina at 39 to 40. Marbella, 83s. to 84s. Whitehaven Iron enquired for. Copper shares (Tharsis) easier at 38⅛ to 38⅜. Canadian, 36s. 6d. to 47s. Home mines dull. Bedford United, 35s. to 37s. 6d.; South Devon and Tamars steady.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and share brokers, Princes-street (Feb. 10) write:—The railway market has not shown much activity during the past week. Glasgow and South Western rose from 117⅜ to 120, from which it has gone to 119⅝. North British has improved from 91 to 92½. Caledonian has receded from 110¼ to 109½, and Great North of Scotland from 67 to 66½. In preference and debenture stocks prices are in one or two cases a little lower. British Linen Bank has declined from 267 to 265; Commercial from 256 to 255; while Union Bank has risen from 211½ to 215. North British and Mercantile Insurance has lost part of the late rise, having fallen from 69¾ to 67. Mining shares are in some cases a little lower, but none of the changes are of any importance.

IRISH MINING AND MISCELLANEOUS COMPANIES' SHARE MARKET.

DUBLIN, FEB. 10.—There is unfortunately no improvement to report in the market for mine shares, which, with the exception of Wicklow Copper, in which there have been several transactions at 4s. 6d., are entirely neglected. This, however, is less surprising, considering that the general markets are dull, and have, moreover, been interfered with by the arrangement of the account. There is a rumour afloat that steps are being taken by someone connected with the mines of the West to obtain more liberal legislation for our mines in imitation, though less revolutionary, of the Land League. If the project be as reported it will, however, have equal support from mineowners and miners, and raise Ireland to the rank of a great mining country.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share brokers, South Mall (Feb. 9), write:—Markets have been very dull for the past few days. Great Southerns have relapsed to 114⅝ and Midlands to 90½. Bandons pretty steady at 91½, though a dividend is proposed at 2½ per cent., against 4 per cent. last year. National Banks dull at 66½ to 67, and Munsters at 6 15-16ths, Provincials firm at 57¾, and Hibernians at 44. Cork Steam Packets are dull at 12⅝. Lyons shares remain 5⅛, and Dalys 3 to 3¼. Gas shares sellers at 7¼ to 7½, and Harbour Board Debentures at 102¾.

BEDFORD UNITED.—The lode at the shaft on the Bridge lode was again taken down last Tuesday; and, although there is a slight falling off in value, it continues to be a masterly lode, and one destined to make a great mine in depth. High authorities in this district are of opinion that the lode now being developed is identical with the lode in Wheal Emma—part of Devon Great Consols—which returned thousands of pounds worth of ore. The future prospects are cheering; and, although shares have somewhat declined through market operations, there are but few better investments than Bedford United. Wheal Marquis, a parallel lode, gave the shareholders 54,000*l.* in dividends, on an outlay of 2*l.* 6s. 8d. per share.

EAST BOTALLACK.—It appears from advices received from the mine on Thursday all operations were going on satisfactorily, stopes returning as in last report, sinking of shaft being pushed on as quickly as possible.

MYNYDD GORDDU.—Reports from this mine continue good. The manager (Feb. 2) calls attention to a very important feature in the mine—that the stopes in the 34 have recently opened out better than for some months past, and by driving only 149 ft. in dead ground at this level (the 34) they have already opened up the same length of ore ground as they found in the 12 fm. level with 328 ft. of dead work. The lode, too, at the bottom is much improved in character, and the ore richer. With these improvements, and the shaft within (say) two months of being down to the 46 fm. level (where there is no question rich ground will be opened up), the mine will be one to be proud of; and by following up the exploratory work he can assert with with confidence that it will be second to none in the county. With the exception of one or two trifling details, they are thoroughly equipped in and out with a first-class plant and machinery. They will be prepared to make larger returns of ore in a few months, and with the expected improved prices for lead these increased returns cannot fail to be largely profitable. Very few mines have been stuck to with so much pertinacity as this one through very adverse circumstances, and the reward is not far distant.

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,

MINEOWNERS, STOCK AND SHARE DEALERS, &c.

1. ST MICHAEL'S ALLEY, CORNHILL, LONDON.

A Correspondent calls our attention to the great slur cast upon British and home mining by an advocate of Indian gold mines in a speech made at a meeting the week before last. We had not previously read the speech, nor any account of the meeting referred to, but the remarks certainly appear pretty strong. The speaker said that the "shareholders had sunk their money in every kind of Cornish and Welsh mining scheme possible for the ingenuity of man to create. There was Wheal this and Wheal that, and these Wheals had brought nothing but 'woe.'" Very witty, according to his own ideas of wit, no doubt, but we may be allowed to observe that the "ingenuity of man" has since created innumerable schemes for gold mining in India, and "woe" will very inadequately describe the feeling of the shareholders when the crash comes, as come it will. We know it is of no use our writing this, that we shall be called croakers and all sorts of names, just as we were nearly 30 years ago when writing upon the same subject. At that time there was the same craze for gold mines in Australia and California that there now is for mines, or so-called mines, in South India. Day after day fresh companies appeared with enormous capitals, great part of which went to vendors and promoters, and the rage spread to such an extent that in 1852 three millions sterling had been invested by the British public in gold mines, and as we then predicted *nearly the whole of it was lost.* We gave in that year in the columns of the *Mining Journal* a list of these mines representing three millions of invested money, and out of 13 of them only two now remain—the Port Philip and the Nouveau Monde, the latter having only lately appeared again on the scene. At the same time (in 1852) we also showed that in seven years (from 1845) *British mines* had paid 1,535,757*l.* in dividends to the shareholders, and that in the year 1852 alone they paid 261,267*l.* 16s.; but with the exception of St. John del Rey, which paid 44,000*l.*, there was not a gold-paying mine in that year, and if we bring matters down to the present time we shall find that since 1852 several millions sterling money have been paid in dividends to the shareholders in British mines, and are *still being paid.* That there are also "Wheals, and Wheals," and "Wheals" that bring woe, no one can doubt. The latter seem inseparable from mining—the greatest of all speculations—and the country is flooded with circulars recommending new concerns on the strength of old names, just as it is flooded with prospectuses and circulars puffing up Indian gold mines, in which up to the present time more than three millions have been invested, and large fortunes have also been made already, but not by the shareholders.

Our own impression has always been—we hope we may prove wrong—that Indian gold mines have for ages been worked by natives as deep as they could go, and that English companies—starting with the heavy dead weight of purchase-money—would be beaten in a deeper search, requiring great engineering skill and heavy appliances, by want of water, labour, and expensive and difficult carriage

The first Indian gold company started with a capital of 100,000*l.*, and has been in existence nearly two years, and an annual meeting was held last week. We have carefully gone through the report of that meeting in the Journal. No statement of the work done is given, nothing whatever said of the discovery of gold, and the only points which strike one of any force are—1. The distance of the mine was 70 miles from the coast, up a very ugly ghaut, and "the shareholders had little idea of the amount of work," the Chairman added, "which this entailed."—2. 1000*l.* a-year was voted to the directors.—3. The company were about to sell a portion of their property for 46,000*l.*, and they were strongly urged by our "wheal and woe" friend to take fully paid-up shares in another company instead of cash!

We prefer home industry and British mines, and regret the injury done to them by this gold craze, for it is nothing less. In Indian gold mines everything must be taken on trust; in England, whatever is said or reported of a mine can be tested in a few hours and a cost of two or three guineas, and it is the rushing into speculations *without* proper enquiry that causes so much loss. Of course, in such a speculative property the best practical agents sometimes err, and are generally too sanguine; and in following up the advice that we have always given, never to speculate at all with money that you cannot afford to lose, and to divide the risk into five or six fairly selected mines, is the only safe way of proceeding.

East Rose and Devon Great Consols were both at about their highest and best in 1845, the latter about a year old, and the former within only a few months of the sad catastrophe which, on July 9, 1846, destroyed the mine. A thunderstorm broke over the sett, and a waterspout made its way down the shaft, and drowned 40 people out of the 200 employed underground. We introduced the mine to London in 1843, with 50*l.* paid up, and they soon rose to 1500*l.* each. The dividends paid exceeded 1000*l.* per share. In 1845, just before the sad catastrophe happened, the mine paid 52,864*l.*, or 413*l.* per share for the year. Devon Great Consols only commenced working in November, 1844, under the direction of some of our clients in Bedford and Holmbush; they held nearly all the mine, and it gave its first dividend in May, 1845, and paid altogether in that year 53,296*l.*, or 54*l.* per share, and at this time the shares were at 800*l.*, only 5s. paid. This was a prosperous year (1845) for miners. The aggregate amount paid in dividends was 215,454*l.*; the value of the paying mines 1,500,000*l.*, so that they paid about 14 per cent. on the average.

In December that year four points in Wheal Maria, the principal mine of Devon Great Consols, were worth 1410*l.* per fm.—the highest on record—the 40 west 400*l.* per fathom; the 40 east, 250*l.*; the 28 west, 400*l.*; east, 300*l.*; and the monthly sale in December consisted of 1319 tons, realising 9162*l.* 13s. 6d. It will be seen here that the western levels were the richest, and kept so till they got to the great cross-course, which split up the lode, and beyond the cross-course it has never yet been found rich. In the Review of the Progress of Mining for 1845, by Mr. J. Y. Watson, F.G.S., and from which we have obtained the above figures, the furore which then existed for mining setts to the west, and by which enormous sums were lost in the vain search for the Maria lode, is fully entered into; and much that Mr. Watson then wrote would apply at the present day to this and other districts. "It has always been the case," he said, "and it ever will be so, that if a mine prove more than ordinarily rich a hundred others will spring up like mushrooms around it, and invite the attention of the public by their proximity to the great gun." "Around the Great Maria innumerable mines have been started—in fact, there never was such a lode as that of Maria. It runs everywhere, and in all directions—north, south, east, and west, just as it suits the concoctors of setts to have it. If one has not the entire lode he will tell you he has a branch of it; if another has a sett quite out of its run he will tell you a cross-course has heaved it into his ground, and so on to the end of the chapter."

Devon Consols was then in a very few hands, and the management an oligarchy, but under it the mine divided over one million sterling from copper upon a paid-up capital of 1024*l.* The mine then became poor, was made a limited company, had to make calls on the proprietors, and has not since paid from copper alone. The present directors made their *profit* from the sales of arsenic, for which there is a great demand.

In the above we have shown what British mining has done in the past, and may do again in the future. And at the worst we would back it against the mineral productions of South India.

The agent writes us very confidently from Carnarvon, and we hope to be soon returning ore. Both at the 90 at Garnon's, and at the 46 at Golden Venture, the prospects are very encouraging.

Also the agents write very hopefully of D'Eresby Mountain, and regular returns.

The sampling at Wheal Crebor has again been put off, and on Tuesday next it will be 550 tons.

The prospects at Kirk Michael are excellent. The sump continues rich, and as it is now down nearly to another level, driving north and south will be commenced shortly in a lode which in the deep adit was continuously good for more than 50 fathoms long. Before the statutory meeting we hope to have a good sale of lead.

Two new levels are about to be driven at Wheal Crebor, at the 96, and they should be watched, particularly the east end. The rise in the 108 must have gone pretty well up towards the 96.

It has been well known for some time past that some [illegible] western ends of Wheal Peevor have been driven up to the boundary, and so many rumours are afloat that we find it difficult to advise, and our correspondent should have the mine inspected and judge for himself.

Meetings of Public Companies.

NEW PENROSE TIN AND COPPER.

The statutory meeting of shareholders was held at Helston on February 5,—Mr. WILLIAM THOMPSON, of Plymouth, managing director, in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said: Gentlemen, you are aware this is only a formal meeting. The Companies' Act requires a meeting to be held within four months from registration. The short intervening time gives the directors but little opportunity to make any lengthened statement as to progress, especially in mining, for you are aware the preliminary work in opening up a mine is necessarily slow. We have, however, here done what has several times previously been attempted, as Capt. Curtis will tell you, and our future prospects are very bright indeed: I am inclined to believe brighter than those of most new mines in the county. The stones of ore now on the table were broken from the lode at 11 o'clock to-day, and are evidence of a strong and rich lode, and which, in my opinion, cannot fail to make great riches. I would have you bear in mind we never expected to have any mineral in paying quantities until we had reached the engine-shaft, which we shall sink as soon as we can get the water out. I am highly pleased, gentlemen, with our mine. I must say in my 25 years mining experience I never saw better indications, and I would not have you forget that when we reach the big flookan course we can drive on its course east and west, and intersect all the other lodes in the sett, which are seven in number, with twelve intersections, not counting iron and lead lodes. I need not, however, take up your time further by remarking on what you are already in possession of, but read Capt. Curtis's report:—

Since operations were commenced in this mine on June 10 last we have driven on the various lodes, and cross-cut 9 fms. 2 ft.: also cleared the winze and secured it below the shallow adit 16 fms., and communicated it with the deep adit; also put in a new footway with ladder sollars, and made everything complete to the deep adit level on the old Trewarvas copper lode, and have extended the deep adit west of said winze 7 ft.; lode 15 in. wide, with stones of mundic stained with copper ore—a very promising looking lode. In the winze the lode in places is 13 in. wide, with stones of yellow and black copper ore; by extending this level the deep adit about 30 fms. further west will intersect the flookan course, where we may reasonably expect a good lode will be met with, and near it, and a little further west, a shaft was sunk by the late adventurers 18 fms.; this was to have been for an engine-shaft, or the most suitable place for an engine. Those views were also borne out by the agents who reported on the mine at the time the operations were abandoned under the sea, or in the eastern part of the mine. The winze referred to was commenced by the late Capt. W. Martin, who had some of the best mines in the county, and at the same time he was driving the deep adit into it to ventilate this part of the mine, also to unwater the proposed new engine-shaft to enable them to develope the whole of the western part of the sett. But some adverse circumstances occurred with them, and all operations were at an end. Since I have been mineral agent of the property several attempts have from time to time been made by some of the leading mine agents to carry out this object. I need not name them, but am glad to say we have the mine now laid open and well ventilated, and I really believe we have a good piece of mineral ground before us, which can be proved at the adit level for little money compared with mining generally, and I strongly recommend you to put on extra men, and let it be driven west as fast as possible; price for driving now 3*l.* per fathom, and no horse hire required for drawing purposes, as the whole of the stuff is now being put into the old engine-shaft. On the whole, I consider this a very fair speculation, rich deposits of mineral may be met with any day.—JOHN CURTIS.

The CHAIRMAN asked Capt. Curtis whether he had anyhting further to add to his report?——Capt. CURTIS said nothing more than that Trewavas lode had considerably improved since he wrote that report. He now advised them to put on extra men, and also set about the engine-shaft. He had great faith in the property.

The CHAIRMAN added:—And so has every one who knows it. Capt. Curtis had charged every bill up to date, so that they do not owe a penny except the current month's cost.

It was determined to push on the development of the mine as fast as possible, and the usual vote of thanks to the Chairman terminated the proceedings.

GLASGOW CARADON COPPER COMPANY.

The annual general meeting of shareholders was held at the Accountants' Hall, Glasgow, on Monday,

Mr. ARCHIBALD ARROL in the chair.

The SECRETARY read the notice convening the meeting, and the report of the directors was submitted.

The CHAIRMAN expressed regret that the report was not more favourable, but explained that the cause lay in matters they could not control. They had been disappointed with the results of the 102 lode, which they had anticipated would turn out a rich lode. But it appeared to have slidden, as the 65 lode had done, away to the south. Capt. Taylor had great hopes that this was so; and if it were the mine would no doubt yet be a very productive mine. The further they sank down—and they were now down 9 fms.—the ore indications were such as to lead to this hope. They had been very careful of their reserves, and it was owing to their reserves that they were able to be in their present position. There was still a large amount of reserves, and they would be able with them to go on for a considerable time. Every economy possible was being exercised, and every energy employed in exploring the mine. They had thought at one time of getting rock-boring machines, but had delayed doing so in the meantime, not thinking it advisable that they should at present incur the cost.——Mr. MAC TEAR seconded.

Mr. J. M. FORRESTER remarked that with regard to the introduction of rock-boring machinery, he was decidedly of opinion that the cost should not be allowed to stand in the way. It was, he thought, a mere question of turning out the reserves. The ore was comparatively poor at present, and the interests of the mine would be promoted if they had boring machines to push on the work.

The CHAIRMAN fully appreciated Mr. Forrester's observations, but must remind him that there was some difficulty in getting boring machines adapted to such a mine, and there were some who thought that hand-drill machines were quite as good as the boring machines. It depended very much on the nature of the lode and the space they had to work in. The cost of one boring machine would be several hundred pounds. As to using up the reserves, it was not a wise thing to do. There was at present a prospect of the reserves yielding more money than they would have done had they been exhausted a year or two ago. The value of copper had been very low for some years, but many people anticipated an advance. If the price rose they would not spare their reserves.

Mr. FORRESTER thought there could be no doubt that they were not obtaining so good a price for their ore as they were reasonably entitled to, but the question occurred to him whether the price of ore would not be advanced by breaking down the smelting monopoly of Swansea.

The CHAIRMAN did not know what would be the effect of securing greater competition at Swansea, but it would be extremely difficult to upset present arrangements there. A mine such as theirs could not establish a smelting work, nor could even one or two mines together. He was afraid they would just require to wait till better times came, for unsuccessful attempts had already been made, under the most favourable conditions, to break up the Swansea monopoly.

Mr. JONATHAN THOMSON informed the shareholders that the relative price of copper and ores was at present in favour of ores.

Upon the proposition of Mr. FORRESTER, seconded by Mr. BRUCE, the retiring directors—Messrs. William Wilkie and Andrew Mac Tear—were unanimously re-elected.

Mr. DOUGLAS moved, and Mr. MINDOE seconded a resolution that 100*l.* be awarded to the directors for their services during the past year—the money not to be paid till after the declaration of a dividend of not less than 5 per cent. He (Mr. Douglas) thought the motion would commend itself to the sense and good feeling of the shareholders. The directors had had a great deal of trouble, but they could hardly expect to be paid till the shareholders had got some good of their services.

The resolution was unanimously agreed to, and the usual complimentary votes having been passed the proceedings terminated.

LEVANT.—At the meeting on Feb. 1 (Mr. James B. Coulson in the chair) the accounts showed a profit on the 16 weeks' working of 140*l.* 3s. 11d., reducing the debit balance from 3160*l.* 16s. 9d. to 3020*l.* 12s. 10d. The balance overdrawn at the bankers is now reduced to 466*l.* 3s., and amongst the assets are copper ore sold 196*l.* 17s., and tin unsold 93*l.* 10s. A contribution of 5*l.* to the dynamite monopoly opposition was voted. Capts. Trezise and Thomas reported upon the various points of operation. They are driving 14 ends by 59 men and nine

boys, and 41 men and eight boys in stopes and winzes: Total men and boys on tutwork, 92 men and 17 boys. They have 30 pitches working by 72 men and 14 boys, tributes varying from 6s. 8d. to 17s. in 1*l.*: total men and boys on tutwork and tribute, 161 men and 31 boys. Most of the ends in the western part of the mine, on the north lode, are looking very well, and they are looking for good results in this direction. They are pleased to state the mine is improved since the last account, and all the machinery throughout the mine is in good working order. They will do their best to reduce the balance as much as possible during the next 16 weeks.

BEREHAVEN MINING COMPANY.—At the general meeting held at Dublin on Monday (Mr. E. Fottrell, J.P., chairman, presiding), the report submitted stated that at the meeting in Feb., 1880, the shareholders sanctioned the renewal of the exploration at Keallogue. This has been done, the shaft being sunk to a depth of 45 fms.; and at the 50 fms. they purpose putting the cross-cut to intersect the lode. This they estimate will take from three to four months. The returns of ore from the Mountain Mine have enabled the directors to pay, in a great measure, the expense on this part, the amount expended being 1125*l.* 7s. 3d., whereas the deficiency on the year was only 274*l.* 6s. 5d. The Chairman said they proposed working the lode in Keallogue Mine, and if the result was successful the shareholders would be again called together. Consistently with the proper working of the mines every expense had been kept down. The report of a mining engineer would be obtained during the progress of the works, and presented at the next meeting. Messrs. P. B. D'Arcy and E. H. Kinahan were re-elected directors, and Messrs. Henry Guinness and J. P. Culverwell were re-appointed auditors

NORTH LEVANT.—At the meeting, on Tuesday (Mr. Richard Boyns in the chair), the accounts showed a profit on the four months' working of 195*l.*, and increasing the credit balance to 700*l.* Out of this sum it was resolved to declare a dividend of 3s. per share, and to carry forward a balance of 400*l.* This is the first dividend that has been paid since June, 1872. The sum of 5*l.* was voted towards the fund for opposing the extension of the dynamite monopoly.

HENRY BRIGGS, SON, AND CO. (LIMITED).

The report of the directors prepared for presentation at the meeting on Friday next states that the gross output of the collieries of the company during the six months ended Dec. 31 has exceeded that of any previous half-year since the formation of the company; but the directors regret to state that the average price realised throughout the district during the four months ended Aug. 31, as ascertained by the investigations of the accountants appointed on behalf of the coalowners and the miners to work out such average, was lower than prevailed at any former period of the company's existence. A similar investigation for the following four months shows a slight increase in the average so far as the company's collieries are concerned, and the directors believe that the advance obtained for household qualities of coal during December, and since Jan. 1, indicates that the lowest point has been touched, and that for the future more remunerative prices will prevail.

Acting on this belief, the directors have refrained from committing the company to the supply during the coming year of large contract quantities at the prices recently current. They believe that this policy will meet with the general approval of the shareholders, and will contribute towards the realisation of satisfactory results during the remainder of the financial year ending June 30 next, when the directors trust to be able to recommend the payment of a dividend. The directors have pleasure in referring to the straightforward behaviour of the workmen in carrying out the provisions of the sliding scale agreement for the regulation of wages, which, owing to the falling markets, has hitherto not acted in their favour; but the directors trust that the time is not far distant when the tide of prosperity will again flow, the benefits accruing wherefrom will, by the sliding scale arrangements, be fairly apportioned between the company and their workmen.

FOREIGN MINING AND METALLURGY.

The aspect of the Belgian iron trade is considered to be scarcely so good. At the same time it is admitted that orders continue numerous, and that the works still have their production engaged for some months to come. The black spot in the Belgian industrial horizon appears to be the less buoyant tone of the advices received from England, which have at once made their influence felt. Plates have been in fair request in Belgium at 7*l.* 4s. per ton. The Marchot rolling mill, the working of which had been interrupted, is about to be again brought into activity on account of a syndicate. The exports of rails from Belgium do not appear, according to the latest available returns, to have made any progress in 1880 as compared with 1879.

The Belgian coal trade continues to be satisfactorily maintained. No advance in quotations appears to be contemplated at present, but, on the other hand, deliveries continue active, and transactions have been carried through with ease. The collieries of the Couchant de Mons, under the patronage of the Belgian Société Générale, have conclude contracts with the sugarworks at 10s. 5d. per ton. The imports of coal into Belgium last year amounted to 915,628 tons, of which 293,867 tons came from England. The imports of coke into Belgium in 1880 amounted to 18,874 tons. The exports of coal from Belgium in 1880 amounted to 4,493,145 tons; of these exports 4,255,849 tons went to France. The exports of coke from Belgium in 1880 were 850,355 tons, of which 691,985 tons went to France. The exports of coal from Belgium in 1879 amounted, it may be added, to 4,235,751 tons; and in 1878 to 3,889,411 tons. The exports experienced accordingly a considerable expansion last year. The imports of coal into Belgium also increased very sensibly last year.

A fair number of new orders for iron have come to hand in the French department of the Haute-Marne, and quotations have been firm in consequence. Rolled iron from coke-made pig has made 7*l.* 12s. per ton, and mixed ditto 8*l.* 8s. per ton. Axles have been quoted at 8*l.* 8s. to 8*l.* 16s. per ton. The present condition of the forges of the Nord is about as satisfactory as could be desired. Contracts which have been concluded are stated to assure work for some time in advance. The prices current have not been the subject of much discussion. The general rate for iron this month may be taken at about 7*l.* 4s. per ton.

The aspect of industrial affairs in Germany is slowly improving. Business has become rather more active in all respects, and prices are advancing little by little. Pig has been firm, but has not advanced to any material extent, as the demand has shown a good deal of vacillation, consumers hesitating to enter into engagements for too long a period in advance. Spiegeleisen is in good demand, especially on Belgian account. White pig has experienced a slight advance. The ironworks are overdone with orders in some cases, and most industrials have their production engaged until July 1. A contract has been let for 9000 tons of steel rails for the Berg and Mark Railway.

According to a statement in the National Zeitung the owners of the patent rights on the Continent of the Thomas and Gilchrist process of deposphorising iron are very profitably sub-letting the process, and the terms on which the privilege is being taken by other establishments seem to show that great faith is placed in the promised results, and that the production of steel from phosphorus iron is likely to become very extensive. The proprietors of the Ilseder Works, says the Berlin paper, have paid 15,000*l.* to the joint owners of the patent right (the Horde Works Company and the Rhenish Steel Works Company), and agreed in addition to pay 3s. 6d. for every ton of steel produced. Moreover, a minimum payment per annum is guaranteed during the continuance of the patent whether the patent is used or not. Similar privileges are being acquired on equivalent terms by other establishment. The profits acquired in this way by the Horde Company will, it is reported, enable the directors to reduce the call upon the shareholders on account of new works which are to be built from 200,000*l.* to 150,000*l.* The production of steel by the new method is said to cost 7s. 6d. per ton more than by the old, but on the other hand the pig-iron used costs only 43s. instead of 75s.

BRITISH ENTERPRISE IN TRIPOLI.—There are unmistakeable signs, writes Mr. Consul Dupuis, referring to the trade and commerce of Bengazi, that the trade and navigation between Malta and Bengazi, which a few years ago was almost exclusively in the hands of British subjects, is gradually but assuredly passing into those of enterprising Greek merchants from Canea, who with their families are continually migrating and settling in these parts, and monopolising the commerce of the place. Manufactured goods, glassware, hardware, stores and provisions of all kinds, which formerly were brought from Malta, are now chiefly supplied from the island of Crete and Trieste. Excepting the occasional importation of a few bales of Manchester goods the traffic with Malta has almost ceased to exist. Silver, which in 1878 was sold at 48 pias., or 6s. 6d. the ounce, last ear only brought 26 pias., or 3s 9d. the ounce. Gold and other valuables likewise experienced similar depreciations, and speculators bought these articles for Egypt and Tripoli, reserving sufficient supplies against a return of more prosperous times.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, *via* Rio de Janeiro and Malta: Permanent machinery has been in operation to-day,* and works well. [* Date of despatch from mine unknown; line interrupted since 27th ult.]

PORT PHILLIP AND COLONIAL.—Telegram, dated Feb. 4: Month ended Feb. 2—Remittance, 400*l.*

FRONTINO AND BOLIVIA (Gold).—The following is the statement of profit and loss for the month ending November:—1759 tons of ore produced 1920 ozs. of gold (average 1 oz. 3 dwts. per ton); gold bought, 350 ozs.=2270 ozs. Value of the gold, including profit on exchange, 5900*l.* Cost at the mines in London and at Medellin, 4137*l.*; paid for gold bought of tributers, 691*l.*=4828*l.*: profit, 1072*l.* In addition to the cost of 4137*l.*, the sum of 1034*l.* has been spent on capital account The mines are all progressing excellently, and the small profit results from a great shortness of water, the dry season having lasted two months longer than usual. The works connected with the bringing the Pocuné water to the mine, which will render the company inpependent of the dry season, are progressing very rapidly, and will soon be completed. In prosecuting these works a new and apparently valuable lode has been cut.

ANTIOQUIA (FRONTINO).—The following is the statement of profit and loss for the month of November:—51 tons of ore produced 34 ozs. of gold, or an average of 13 dwts. per ton. Estimated value of the gold, including profit on exchange, 103*l.* Cost at the mines, at Medellin and in London, 427*l.*: loss, 324*l.* In addition to the above cost the sum of 168*l.* has been spent on capital account.

PIERREFITTE.—Feb. 5: The manager reports as follows: No. 2 stope, above No. 2 level, yields 10 tons of lead ore and blende per fathom; No. 1, below No. 1 level, 6 tons; No. 2, 6 tons; No. 5, 9 tons; No. 7, 9 tons; No. 8, 5 tons. The lode in No. 2 end has improved for lead and blende since my last report: 77 tons of ores have been sent down over the cable during the past week, and about 80 tons broken from the stopes. The main shaft of the crusher broke this week, which will be replaced by a stronger one next week. This breakage causes an interruption in our dressing operations.

NEW GOLD RUN.—Jan. 20: I made a partial clean up in the mine on the 17th inst. after a run of 20 days; the production is about $3000; we shall have exact returns from the mint in a few days. This is doing very well indeed; we are now up to the high bank, and have plenty of gravel to wash, and may look forward to making some good runs. The mill is running regularly, and if the bottom continues as good as it apparently is at present we shall do better than heretofore.

POTOSI (Gold).—The directors have received the subjoined telegram from the mines, which was despatched about Jan. 20—"Remittance, 1250 to 1300 ounces; 17 days full work; cause of small remittance, difficulty of procuring native labour."

RUBY AND DUNDERBERG CONSOLIDATED.—Report on the mines for the week ending Jan. 16:—Main Shaft: The ground has been much harder than usual this week: progress this week, 8 ft.; total 142 ft. below the 600. The 600 ft. level continues in very favourable looking ground, the ore seam varying from 6 to 12 in. wide. I expect to make a connection with the 500 ft. north winze in a few days. The rise 40 ft. north of the north winze, on the 500 ft. level, has been advanced 10 ft.; total above the 500 feet level 56 feet; the ore at present is very small, and of little or no value. The ore in the stope above the 500 south is improving in quantity, but the quality is rather low grade. A portion of it only is of sufficient value to ship to the furnace. The south-west drift from the west cross-cut, on the 400 ft. level, has been advanced 12 ft. during the week; total 85 ft. from the west cross-cut. The ground is looking more favourable as it approaches the stope above the 500 south, where a connection will be made for ventilation. At the 300 ft. level, north from the old works, nothing done during the week. At the 300 west cross-cut there is quite a change in the ground, the rock being very hard, and containing oxide of iron, which is a favourable indication of ore. We have shipped 65 tons of ore, and have 40 men at work and six tributers. —Bullwhacker: The stope in the 75 ft. level is producing the usual quantity of ore. The main incline has been cleared out and timbered 36 ft. during the week; total below the 180 ft. level 56 ft. We have contracted with a party of four men to take out ore from the bottom of the old stopes on the 180 ft. level, at $3·50 per ton. We have shipped 30 tons of ore this week, and have seven men at work besides the four contractors.

— Telegram from Eureka, dated Feb. 8: The week's run from the furnace was $6670, from 141 tons of ore, producing* — tons of bullion. The shipments of the week were 141 tons of ore.—[* The number of tons of bullion is indistinct.]

PONTGIBAUD.—Feb. 1: Roure Mine: The 200 metre level, south of Taylor's engine-shaft, is in a hard, wet, and unproductive lode: the same level north is in soft, unproductive ground. The 175 metre level south yields a little saving work irregularly; the same level north is poor. The lode in the 150 metre level north is composed of quartz, letting out a great quantity of water. The winze in the same level south is unproductive. The 100 metre level south yields stones of orey stuff irregularly. The 80 metre level south, on the eastern part of the lode, yields low quality orestuff. The rise above this level yields ¼ ton of ore per current metre. The 40 metre level south, on the same part of the lode, yields a little ore stuff irregularly. The 20 metre level north, on the caunter lode, has entered productive ground, and yielding ¼ ton of ore per cnrrent metre. The adit on the same lode yields about ½ ton of ore per current metre. At Sey the adit north is still in unproductive ground; we have set to cross-cut both east and west to see if any lodes lies in either direction. At Seysonbre good progress is being made in driving towards the lode, which we hope to cut in the current month.—La Brousse: The sinking of Alice's shaft goes on regularly. The 160 metre level, south of the shaft, yields some pretty good stuff at the foot of the level. The same level north yields a little low-quality orestuff. The 140 metre level south yields ¼ ton of ore per current metre. The 120 metre level north yields low-quality orestuff. The 100 and the 80 metre levels south are unproductive.—Pranal: The 110 metre level, north of St. George's shaft, yields a little orestuff. The same level south of shaft yields ¼ ton of ore per current metre. The 90 metre level south yields a little low-quality orestuff irregularly. The same level north yields ¼ ton of ore per current metre. The 70 cross-cut east, north of George's shaft, has gone through lodey stuff for a width of 1 metre, producing stones of carbonate of lime. The 50 metre level north yields ¼ ton of ore per current metre. The 30 metre level south is unproductive. At Villelongue the piat has been cut at the 25 metre level and the driving of the cross-cut commenced. A vein has been intersected 30 ccetimetres wide, composed of quartz and barytes, spotted with silver lead ore. During the month our surface operations have been carried on with difficulty, but without much interruption in the carriage and washing of the ore. The samplings have amounted to 223 tons.

VIRNEBERG (Copper).—Capt. R. K. Roskilley, Feb. 8: Hadley Engine-Shaft: The 160 cross-cut to drive east of shaft, by six men, at 50 marks per metre; we are through the basalt in this end, and have to-day pricked into the lode, which, so far as seen, is composed of a very fine quartz, with stones of copper ore. We shall not be able to report fully on its character and width before we are further into it, and this will take us another week or 10 days to accomplish. The 160 metre level, to drive south of cross-cut, by two men, at 35 marks per metre; in the forebreast the lode is very large, and yielding stones of copper ore—a kindly lode. A cross-cut to drive east of the 140 metre level, by two men, at 40 marks per metre; the lode here has a very promising appearance, and yielding good stones of copper ore. The object of this cross-cut is to ascertain the size and value of the lode standing between this and the 140 metre level north of cross-cut. To rise in the back of the 140 metre level, south of shaft, by four men, at 16 marks per metre; this is being put up to communicate with the level above, which, when accomplished, will not only give good ventilation here, but will enable us to take away the piece of ore ground standing between this and the 120 advantageously. To stope the back of this level, south of ditto, by six men, at 18 marks per metre; the lode is worth 6*l.* per fathom. To stope the back of ditto, north of rise, by six men, at 15 marks per metre; lode worth 10*l.* per fathom. To stope the back of the 140, north of cross-cut, by six men, at 18 marks per metre, and the end to drive north of ditto, at 40 marks per metre; the lode in the former is worth 10*l.* and in the latter 12*l.* per fathom. To stope the back of the 120 metre level, south of shaft, by eight men, at 14 marks per metre; the lode here is still disordered by the horse of killas, and is producing only dressing work for copper ore. To stope the back of ditto, on the footwall of the lode, to six men, at 16 marks per metre; the lode is a little improved, and worth 5*l.* per fathom. To rise in the back of the 100 metre level, north of shaft, by two men, at 18 marks per metre; the lode is 3 ft. wide, composed principally of friable quartz, with rich stones of copper ore—a very promising lode. The 100 metre level, to drive south of shaft, by six men, at 60 marks per metre; the lode is large, and worth 20*l.* per fathom for copper—a fine-looking lode. We have ready for shipment about 2562 centners (125 tons) of copper ore. I have engaged a Rhine craft at 4¼ gulden per last of 4000 lbs. to ship same to Rotterdam for Swansea; and as soon as the boat arrives no time shall be lost in getting the ore on board. Our dressing and surface work is going on satisfactorily.

PESTARENA.—S. Gifford, Feb. 2: Pestarena District, No. 1 Lode: The 33 end north, at Peschiera, shows no change from the flookan branch with stiffish schist. The 33 north, at Acquavite, is in hard schist, with a division line representing lode. The 46, at Acquivate, is being driven north in hard disturbed ground, with no appearance of lode. The driving of the 55, at Peschiera, has been resumed on a small lode, spangled with low grade pyrites. The lode in the 80 north shows a small string of ore in scaly schist.—No. 2 Lode: In the south end of the 65 easier and more congenial rock is appearing.—No. 5 Lode: The winze in the 33 fm. level north is in stiff ground, with the lode still standing. The end north in the 65 shows patches of quartz in bottom, with a little flookan. In the stope and rise above this level south the rock is hard enclosing a small lode, which appears likely to widen out. The stopes at this level continue to be highly productive. The cross-cut west from the 90 is still in hard micaceous schist. Half of No. 1 block of mills has been shut down, but the new mills have been set to work, and the grinding power is thus kept up. The new hauling machine is now kept steadily at work, and the mine is being cleared for sinking the shaft, and driving the bottom levels. There have been good falls of snow for carrying the stocks of timber and mill beds.

Val Toppa: The end north in No. 1 level, on new lode, shows a lode-like mass of lode-grade quartz making off in the west side, and yields 6 tons of 4 dwts. ore per fathom. The end south has the quartz more broken up and undecided, and now yields 8 tons per fathom, at 4 dwts. per ton. The end south, on west lode, is in fissile schist, with a wall to the east. The end north, on this lode, in No. 2 level, carries much magnetic pyrites, in a fair-sized lode of quartz, and yields 6 tons of 5 dwts. ore per fathom. The end south, on the great quartz lode, makes small patches of quartz in the bottom without form of lode. The end south, in No. 2 level, thought to be driving hitherto on the flat lode, is now seen to be on the slide worked on in the lower levels. A cross-cut in the No. 2 level, going west from the great quartz lode, is being driven in hard quartzite. The end south, at the intermediate level, below No. 2, on the flat lode, has broken masses of quartz without walls, and now giving 6 tons per fathom at 6 dwts. per ton. In the end north from the winze, in this level, a good lode of low-class quartz continues, and at the present time it produces 8 tons per fathom of 4 dwts. ore. A rise from the intermediate level goes up in hard schist and narrow bands of quartz. The end south at No. 3 level on slide is in broken schist, with two inclined floors. The cross-cut east at No. 3 level has got into stiffer rock, letting out water. In the rise on the slide at No. 4 level the rock is harder and more chloritic, with slide more perpendicular. The average yield of the ore treated last month (4 dwts. 22¼ grs. per ton) is the lowest yet reached by the mills, and it is feared this will continue unless some good deposit of better class ore be struck soon. Severe cold and frost have prevented regular dressing being carried on, which has tended to lower the grade of the ore treated.

*** The following mines were unavoidably crowded out last week:—

ENGLISH-AUSTRALIAN GOLD.—The directors have received the following advices from Australia:—Mr. Mark Pollard writes, Fryerstown, Dec. 23, 1880: 420 ft. Level: No. 1 rise on this junction of the slide and the lode: We have connected this rise with the 320 ft. level, which is 10 ft. further to rise than I anticipated, passed through two blocks of stone in the western wall; have not seen any gold in them; cannot say anything about the thickness of them yet. I shall commence to drive south on the block of stone that we met, as stated in my last report. I have had four men in this rise this fortnight; two of the men have gone back to the stopes from No. 4 rise towards the boundary. I shall remove them back again as soon as I have room for them to work. I have the men generally working all day shift, it being more advantageous.—320 ft. Level: The stopes from No. 1 to No. 2 rise are looking just the same; ground still very hard. I have two men and one young fellow working in this place.—180 feet Level: The quartz at this level is just the same. I shall remove some of the men from the 150 ft. level to this stope as soon as I have more room for them to work; this is a payable stope.—150 ft. Level: The stopes at this level are looking just the same, but very expensive, as an immense lot of timber is required, and a great deal of labour in filling up the ground. I have two men stoping on the eastern side of this drive; quartz about 5 ft. thick, but poor.—70 ft. Level: We have not gone through this run yet, but I hope it will be completed by my next report. We have crushed 557 tons for 15 days crushing; result retorted gold (cannot weigh with our scales), which is much better than we have had for some time. Mr. Clarke writes:—"The yield is 146 ozs. 6 dwts. retorted gold, weighing, after being melted, 144 ozs. 13 dwts., and I think it will assay, from its appearance, 23 carats."

YORKE PENINSULA.—The directors have received advices from the Committee of Inspection at Adelaide, with reports from the Kurilla Mine to Dec. 6 last. The following are extracts from the report of Thomas and John Anthony:—The Kurilla Lode: The lode in the 67, east of Hall's shaft, continues poor, and we can now hardly expect to find ore in paying quantities until reaching the slide, about 15 fms. further east. We have to-day resumed driving the 55 east, on the north part of the lode, over which in the 45 we passed over good ground. The lode in the face is pinched with hard rock, not unusual in this part, but flanks of ore succeed the compressions. The winze sinking below the 55 has passed through irregular patches of ore, but not of much value. * * *—Morphett's Lode: Since reporting the 55 eastern drive, now 24 fms. east of the tunnel, the lode has recovered its former value, and is worth 5 tons of 16 per cent. ore per fathom. The 55 is driven west of the tunnel 24 fms., and the lode is worth 5 tons of 16 per cent. ore per fathom. * * * The 43 east has been crossed by a cross-course or slide, and we are now searching for the lode on the east side of it, but without any satisfactory results as yet. We have no doubt, however, that the said slide will exert a salutary influence on the lode, as has been the case in similar occurrences further west. Two men are stoping the wide lode at the 30 in the extreme eastern exploration. The yield of ore about meets the expenditure.

At the 20 we have continued driving east; the rock is gradually getting more micacious, and the general features are gradually, but certainly, improving. At the 10 a small, but rich, branch of green ore was met with, but a cross floor has again displaced it. In the new lode, or branch north of Morphett's lode, the winze below the lode has not discovered anything new, but it will throw new light upon this lode at the 20. Two men are stoping at the 30 at 6s. 8d. in 1*l.*, and two others at the 20 at 7s. in 1*l.*—The New Sections: We have extended as opportunity has occurred the 8 fm. level about 3 fms. further west; the lod continues keeping a westerly bearing, and producing such occasional pockets of ore as fairly warrant further exploratory operations. The whole of the machinery for dressing purposes has arrived on the mine. . . . To save time we have put the first jigger near enough to the workshop to be driven by a belt from the shafting, and hope in a few days to commence jigging smalls. The machinery throughout the mine is working satisfactorily.—Ore Returns: 266 tons of 16 per cent. had been dispatched from the mine for shipment to England, and there remained on hand at the mine on Dec. 3 756 tons of 14½ per cent. and 4450 tons of low-class ores of about 5 per cent.

FLAVILLA.—Jan. 13: The amount of work done for the month of December is as follows:—In Brook's south drift we have drifted 28 ft., and taken out about 1 ton of ore. In the Brook's north drift we have drifted and stoped about 20 ft., and have found but very little ore (about 200 lbs.). In the branch we have drifted 12 ft., and taken out about 500 lbs. of ore. In No. 1 we have sunk 21 ft., and I think we are very near the vein. The rock we are in now is of precisely the same nature as the rock that overlays the vein on the other side of the big break, end I think that by or before you get this letter we shall have struck thevein.

COPIAPO.—Thos. B. Hall, Dec. 10: Dulcinea: I beg to hand you monthly reports of these mines, with the setting contracts for December:—The flat now being excavated at the 180 will be completed in a few days more, when we shall resume sinking the shaft below this point, and also the driving of our ends north and south. The 170 north, by two men, at $30 per metre; the lode is wider, but does not contain sufficient ore for valuation. A few days ago it was yielding 1 ton to the fathom, and is still looking favourable for an improvement. The 170 south, by two men, at $30 per metre; the lode is 4 ft. wide, and yields 6 tons of ore per fathom. Driven last month, 1·55 metres. The winze sinking below the 170 south, by three men, at $300 per metre; the lode is 3 ft. wide, and giving 4 tons of ore to the fathom. In the 160 south we are driving through the cross-course in search of the lode; I expect to find it thrown into the eastern side. The winze sinking below the 160 south, by three men, at $35 per metre: this winze is at present poor, owing to our sinking it entirely in the footwall, this being more expeditious and convenient; we shall reach the 170 in a few days. The lode standing in the hanging-wall is large and very good. In the 160 north we are still engaged stripping down the lode that my predecessors left standing in the footwall; it is 3 ft. wide, and yielding 3 tons of ore to the fathom. The 150 north, by one man, at $20 per metre; within the past month the lode here has improved very considerably, and is now yielding 1½ ton of ore per fathom. The 150 end, south of cross-course, set to one man, at $10 per metre; the lode is narrow, and containing iron and spots of ore, but not sufficient to value. The 140 end north, by one man, at $12 per metre; we have here a well-defined lode, but at present poor. There will be two chiflons set in this level, north and south of Fletcher's shaft, in order to communicate with the 150 for ventilation and to facilitate the stoping. We are, however, obliged to defer this work for the present, owing to the scarcity of miners. The cross-cut in the 60, to communicate with the engine-room, is now being driven by two men, at $30 per metre. The level driving at the bottom of chiflon, towards Holland's shaft, is set to two men, at $20 per metre. We are also continuing to sink the chiflon in the Atacama sett, at $15 per metre; both of these poins are unproductive. We have contracted to sink Holland's shaft 4 metres, at $50 per metre, the contractor agreeing to leave 10 per cent. of his earnings in the hands of the company until the work is completed. There are 13 men stoping in the backs of the 170 north, the 160 south, the 150 north and south, and the back of the 140 north. There are also 26 tributers working above the 130.

Checo Copper Mine: During the past month the 40 end on the south lode, by one man, at $12 per metre, was driven 5·85 metres; the lode here is quite destroyed, and as there is only a few yards of ground standing between this and the old workings we have suspended this point for the present. The 40 end on the north lode, by one man, at $13 per metre, has been driven 2·10 metres; the lode has a very fine appearance, and yielding ½ ton of ore per fathom. The chiflon sinking below this level, by two men, at $14 per metre, was sunk during last month 4·60 metres; some days ago this point was yielding 1 ton of ore per fathom, but is now only giving frequent stones of ore. We have seven men stoping—two in the back of the 50, and five in the back of the 40. During the last month the 50 cross-cut was driven 1·35 metres, by one man, at $16 per metre; the ground continues to be of the same nature as we have had for some time past. November production and estimated percentage, 400 kilometres of 13 per cent.

Silver Mine: Chiflon sinking below the bottom level on the north branch, by two men, at $15 per metre; this chiflon has been sunk during the past month 3·50 metre. We have met with a "floor" here, which is letting out a little water, and has somewhat disordered the branch for the present; we have two men stoping—one at the surface, and the other a few yards below. Estimated value of Dulcinea (November produce), $20,800; expenditure, $10,000; profit, $10,800. Estimated value of Checo (November produce), $1360; expenditure, $1200; profit, $160. Estimated loss at Silver Mine for November, $100. Total profit for November, $10,860.

PIERREFITTE.—Jan. 29: The manager reports: No. 1 stope over the No. 1 level is worth about 5 tons of lead ore and blende per fathom; this stope is suspended for the present on account of water in consequence of the heavy snow. No. 5 is worth 10 tons. No. 7 is worth 10 tons. No. 8 is worth 5 tons. In No. 2 end the lode is improving. We have sent 65 tons of ore over the cable this week, and 80 tons broken from the stopes. In consequence of the accumulated stock of ores underground we have lessened hands in this department; that is in the stoping department; and, therefore, the quantity broken is less. The weather having moderated about 18 tons of lead ore have been dressed since my last report, about a quarter of which is second-class quality, and three-quarters first-class quality. About 12 tons of good blende have also been put to pile. The hand-jiggers, although capable of doing much work, are altogether incapable of dealing with the ores at the rate the crusher turns them out, and we shall commence to manufacture (on Monday next) a new set of machine jigs having six sieves, which we calculate to make and erect, together with the needful foundry work, and get them to work in about 23 days from this time. These jigging-machines are capable of putting a large quantity of ore per day through. If the weather continues moderate a few days we shall be in a position to send you samples for two parcels of lead ore of first and second quality.

VIRNEBERG.—R. K. Roskilly, Jan. 25: Hadley Engine-Shaft: The 160 cross-cut, east of shaft, is without any alteration to remark since the report of last week; the end is still letting out a large stream of water, and this with the soft nature of the ground has much impeded our progress here. The character of the basalt is congenial and mineralised throughout, and looking at the fine stones of copper pyrites met with occasionally in driving, we cannot doubt but that a productive lode east of the tuga may be expected. This end is east of shaft 48½ metres, and the driving is being pushed forward as fast as possible in order to reach the lode still before us.—The 140 and 120 Stopes: The men in the 140 stope, south of shaft, are engaged in rising in the back of the same, in order to lay open this section of ore ground and enable us to stope it away advantageously. In the rise it has a more favourable appearance, and producing some good copper ore. The stope in the back of the 140, south of shaft, is a little fallen off in value, and is worth only 6*l.* per fathom. The stope in the back of this level, north of cross-cut, is worth 10*l.* per fathom, and in the end north of same the lode is worth 15*l.* per fathom. We are opening up here a good piece of available ore ground. The lode in the stope in the back of the 140 metre level, south of rise, is worth 8*l.* per fathom, and promising an improvement. The stopes in the back of the 120 metre level, south of shaft, are disordered by a horse of killas; yielding dressing work for copper. This we believe to be only temporary, and when out of its influence the lode will resume its former value. In the rise in the back of the 100 metre level, north of shaft, the lode for the part carried is 3 ft. wide, producing some good copper ore. In the 100 metre level, driving south of shaft, the lode is much improved, and worth 20*l.* per fathom—a fine looking lode. Owing to the very severe weather we have had during the past week our dressing operations have been much retarded.

COLORADO UNITED.—Advices from the mine up to Dec. 31 are to the effect that the accounts to the close of the year will immediately follow the despatch of those which have now arrived that the Terrible Mine is doing well, and that the new engine chamber is nearly finished.

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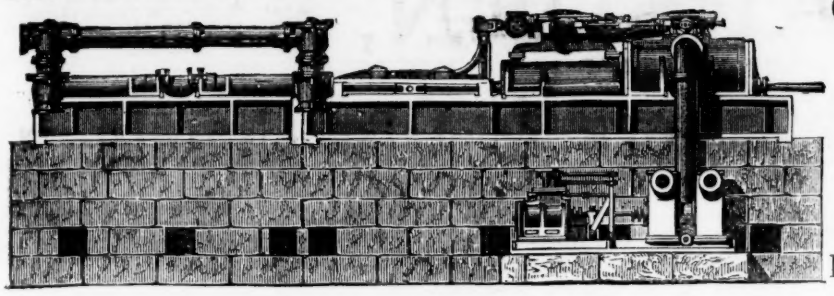

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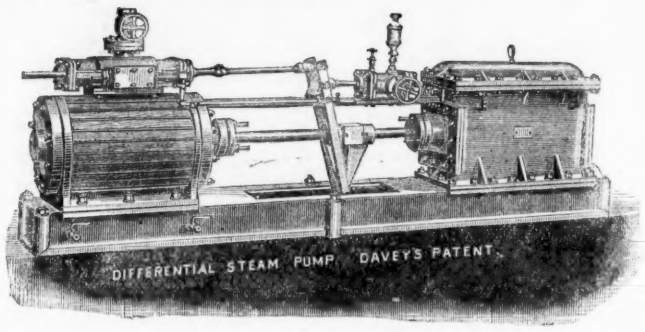

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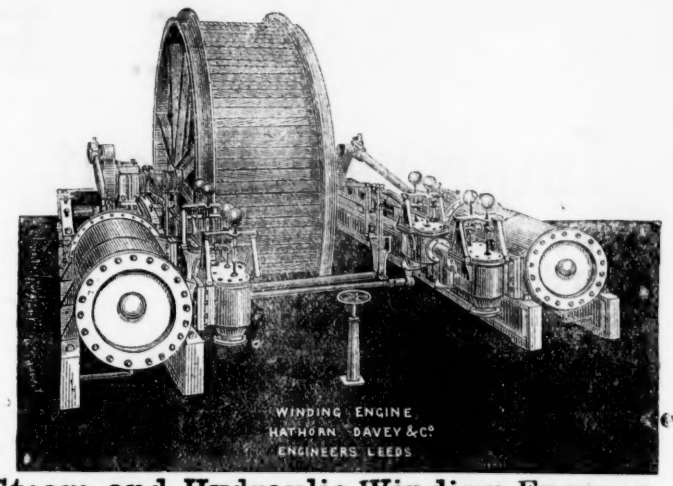

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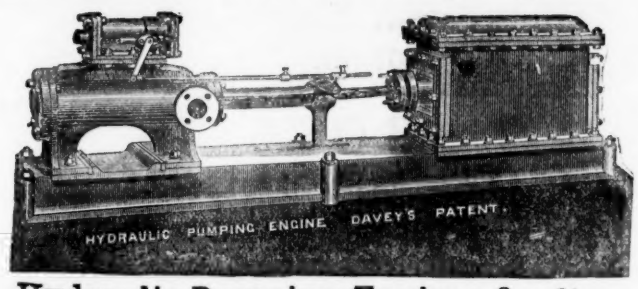

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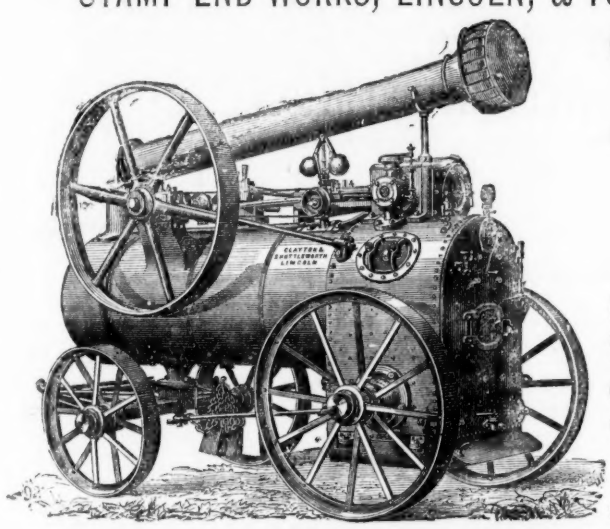

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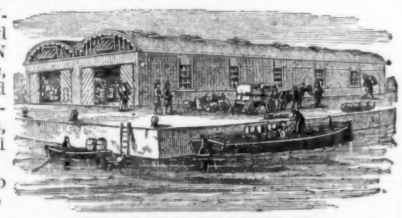

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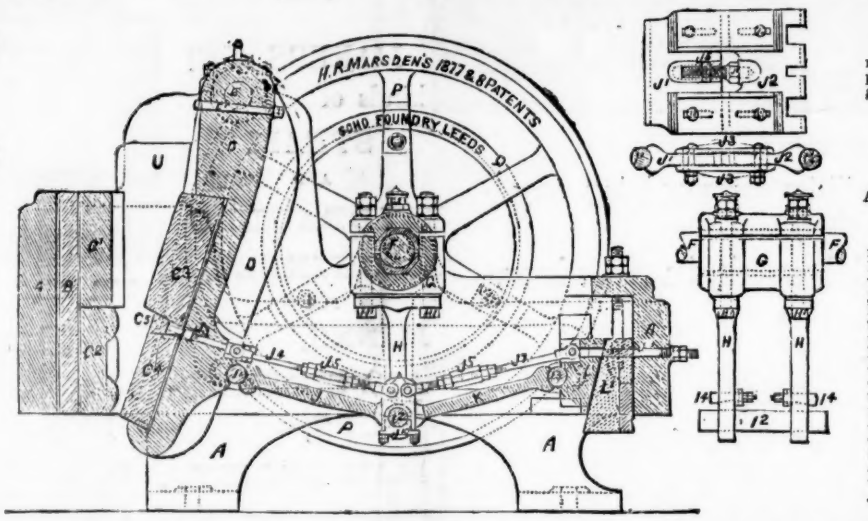

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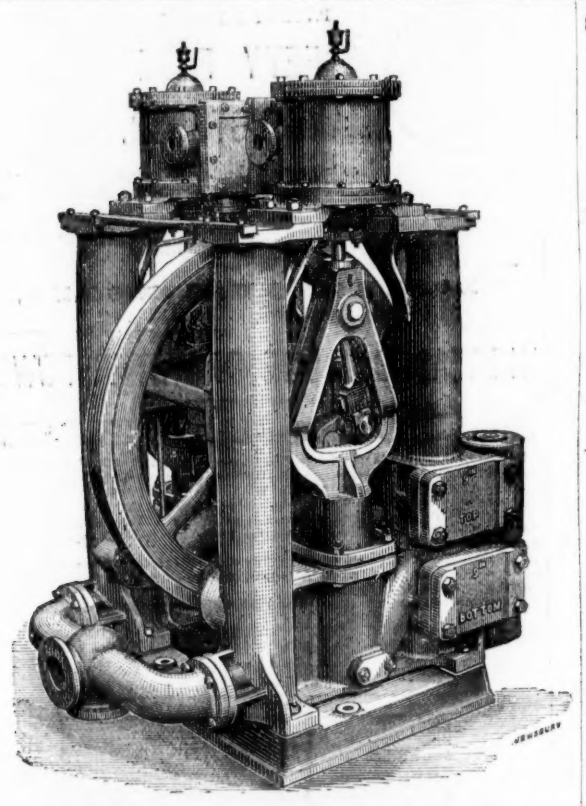

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